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**Productive hybrid learning environments
in times of transition:
A multiple case study
in higher education health contexts**

A thesis presented in fulfilment
of the requirements for the degree of

Doctor of Philosophy

at Te Kunenga ki Pūrehuroa: Massey University

Jennifer K. Green

2026

Declaration

I declare that no part of this thesis has been submitted for a degree at Massey University or any other tertiary institution. This thesis describes original research conducted by the candidate, Jennifer Kay Green under the supervision of primary supervisor Associate Professor Lucila Carvalho and co-supervisors Professor Nicolette Sheridan and Dr Nadine Bishop.

Abstract

Higher education health contexts have incorporated hybrid learning environments for over three decades with varying degrees of acceptance. Responses in educational institutions to the Covid-19 pandemic highlighted the need for an understanding of how digitally-mediated learning might extend students' experiences beyond physical classrooms. Drawing on ecological perspectives in education, learning is foregrounded as part of a complex web of elements contributing to productive learning environments. Anchored in postdigital learning contexts with consideration for the influences of Networked Learning principles, Activity-Centred Analysis and Design (ACAD) is used as an analytical framework to discuss the study findings from multiple case studies that explore student and academic staff perspectives in higher education.

These theoretical frameworks informed the systematic literature review ($n=21$) incorporating a framework synthesis approach to identify potential contributors for productive, hybrid learning environments. In combination, the body of literature and chosen theoretical frameworks laid the foundation for this multiple case study research to explore and answer the thesis questions identifying the characteristics of productive, hybrid learning environments in higher education health contexts.

The cases include undergraduate courses in health disciplines encompassing nursing, pharmacology and social work. Data was generated through observations of teaching and course artefacts, and semi-structured participant interviews. The ACAD framework allows examination of relationships between tools, tasks and social arrangements and explores their influence on student learning activities in postdigital contexts. The experience of learners in different locations and disciplines and educators adapting to the transition to hybrid environments, identifies contributors to productive learning environments.

Cross-case analysis shows tangible, flexible and timely support for students creates a learning environment that is safe, enjoyable and supports students through personal, professional and academic challenges. Additionally, course design with a consistent format, flexible access and purposefully curated

content focused on preparing students for graduate practice, contributes to productive learning environments. A clear understanding of foundational learning principles within a dynamic, collaborative and cohesive teaching team can assuage the challenge of unpredictable pandemic-associated learning design requirements. Importantly, markers of productive, hybrid learning environments in higher education health contexts include the creation of rich, realistic teaching and learning opportunities using resources commonly found in professional practice contexts. These experiential opportunities support the development of skill proficiency and incorporate intentional challenge to equip students for professional growth. Together, these findings indicate productive, hybrid learning environments incorporate a range of intentional design for learning considerations to effectively support students, faculty, and to create rich, realistic teaching and learning opportunities.

By taking an ecological stance, this multiple case study research draws on and extends the ACAD framing to propose an approach to actualise productive learning environments in HE health contexts. The novel Aotearoa Design for Learning Framework combines the dimensions of the ACAD framework with the principles of Te Whare Tapa Whā to support exploration of design and analysis of teaching and learning within healthcare education in the Aotearoa New Zealand cultural context. Other key contributions to new knowledge include 11 principles for the design of productive, hybrid learning environments in the health disciplines and a self-auditing tool to support teacher professional development. This thesis contributes to extant knowledge by identifying imperatives of design for learning in post-digital contexts for hybrid learning environments to be productive.

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E hara taku toa i te toa takitahi, he toa takitini.

My strength is not as an individual, but as a collective.

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Whaia te iti kahurangi ke te tūohu koe me he maunga teitei

Seek the treasure you value most dearly:

If you bow your head, let it be to a lofty mountain.

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This research adopts a multiple case study design (Stake, 2006) and is a thesis by publication. The initial publication (Green et al., 2020) developed during the early phases of research planning, was informed by a review of the literature, a developing understanding of the ACAD framework (Carvalho & Goodyear, 2014) and the influences of the Covid-19 pandemic on course design in higher education. One of the case studies (CS3), and aspects of all three cases studies, have been peer reviewed and published. The CS3 book chapter (Green et al., 2023) is reproduced in Chapter 7. The text of Green (2022), presenting lecturer perspectives across the three cases, is reproduced within Chapters 5, 6, and 7.

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Glossary of Māori Kupu (Words)

Ako	To teach and to learn
Kaiako	Teacher
Kaumātua	Elders
Kaupapa	Foundation, plan, objective
Kawa	Guiding principles
Kete	Basket
Mana	Authority, status, power, control, respect; links to both human, spiritual and natural environments
Mana enhancing practice	Health professional practice that recognises and enhances the mana of a person
Māori	Indigenous person of Aotearoa New Zealand
Marae ātea	Open area in front of the whareniui
Matauranga Māori	Māori knowledge
Mihimihi	Greeting and acknowledgment to hosts and facilitators
Noho	The experience of being on the marae
Nohoanga (Noho) marae	Overnight marae stays
Pākehā	New Zealander of European descent.
Pepeha	Personal introduction which includes family connections, environment, and locations
Powhiri & mihi whakatau	Māori ritual of engagement
Tangata Tiriti	People of the Treaty refers to the second arrival people in Aotearoa New Zealand who signed a treaty with tangata whenua in 1840
Tangata whenua	People of the land refers to the first arrival people in Aotearoa New Zealand.
Tangitangi	Weeping, mournful

Tauira	Student
Tauiwi	Non-Māori New Zealanders
Te ao Māori	Māori worldview
Te Reo Māori	Māori language
Te Tiriti o Waitangi	The Treaty of Waitangi
Tikanga Māori	Culture, practices, and protocols
Tūpuna	Ancestors
Waitangi Tribunal	Judicial system established to consider claims of Tangata whenua for redress of past wrongs by Tangata Tiriti
Wānanga	A higher education place of Māori learning
Whakawhanaungatanga	Building relationships
Whanaungatanga	Connectedness
Whare	House
Wharekai	Dining room
Wharenui	Meeting house; large main meeting space usually for sleeping in

Chapter 1. Introduction

1.1 Introduction

Hybrid learning environments can extend student experiences beyond physical classrooms and offers connection, active participation, and access to resources, enabling students to co-create knowledge. Hybrid learning environments encompass a wide range of ideological and pedagogical foundations. The word 'hybridity' might express varying arrangements within online and physical spaces, formal and informal learning contexts, and in other forms of innovative learning such as those which mimic reality in physical and digital worlds (Mor et al., 2015). It is not uncommon to see people - in cafés, at bus stops or in libraries - inhabiting a virtual space, potentially learning and collaborating, being physically present and often 'alone' while sharing ideas with others almost anywhere. The Network Learning Editorial Collective (NLEC) (2020) claims "it is now rare to find real learning situations that can be described as 'purely face-to-face' or 'wholly online' (p. 2).

In an educational context, 'hybrid' usually denotes variation in the intermeshing of physical and virtual learning spaces (Goodyear, 2020). By exploring hybridity in education, it is possible to more fully understand the importance of connections between multiple elements in learning. The amalgam of spaces and places that bring learners and learning together facilitating connections and mediated by technology is known as networked learning and has been researched for more than 20 years. Postdigital research also explores connections between human interactions and physical and digital worlds (Bayne et al., 2020) and there is increasing interest in the wider socio-economic and political framing of these connections (Jandrić & Ford, 2022; Knox et al., 2020).

There has been a long history of technology-use across many disciplines in higher education (HE), especially in the health care disciplines where simulation technologies are often used as a way of preparing students for their future clinical work. Importantly, rapid changes in university learning contexts in recent years have also seen educators more widely accepting hybrid modes of learning. Indeed, Covid-19 arguably disrupted the landscape in higher

education, as learning technologies became crucial for teaching and learning during the Covid-19 global pandemic when students needed to continue learning online and could not be present on-campus.

This research sought to explore teaching and learning practices in health education courses, acknowledging the role of digital technologies in influencing our everyday living (Jandrić et al., 2018). But as the research project unfolded, it coincided with the onset of Covid-19 and it became even more crucial to understand the impact of multiple elements and the environment on teachers and learners. The research was therefore well placed to explore productive, hybrid learning environments in a time of immense transition where there was movement away from predominantly classroom face-to-face teaching.

While research has validated well-planned technology-enhanced learning environments in a variety of higher education contexts (Hayes & Graham, 2019; Hodges et al., 2020; Männistö et al., 2019; Shorey et al., 2018), this has not been without challenge. Czerniewicz (2018) contends that issues with connection and device capacities perpetuate inequity. Others point to a lack of technological skills for teachers and students (Chua & Bong, 2022) and to a potential lack of relational connection and tangible support within emergency remote teaching (Douglas et al., 2022; Green et al., 2020). There has also been concern about the perceived neutrality of incorporating technology to enhance teaching and learning (Bayne, 2015). The recent global pandemic, however, removed choice from many educators who were required to immediately move their teaching online. Technology was only one part of this complex picture with considerations needing to include sociocultural and sociomaterial influences in which human and non-human elements influence learning. These enmeshed aspects of hybrid learning environments will be fully discussed throughout this thesis and form a basis for understanding current theories and perspectives on design for learning and its application in higher education learning contexts.

Design for learning requires a deeper understanding of how diverse elements might be combined to support learning activity, and this includes pedagogical strategies. Pedagogy is a term commonly used in the literature to refer to the

method and practice of teaching adults and children, although this Greek term originally focused on the teaching of children. Adopting the term 'andragogy' to describe the unique learning characteristics of adults, Knowles et al. (2020) contend the learners' preferences, desires, view of themselves, motivations and prior experiences must be considered. The current study incorporates heutagogy, a notion that advances the principles of andragogy to focus on the agency and self-determination of learners to identify their own learning needs and determine their own learning pathways (Blaschke et al., 2021; Hase & Blaschke, 2021a).

The current research makes an important distinction between 'learning design' and 'design for learning'. Mor et al. (2015) explain 'learning design' has an underlying assumption of a teacher or learning designer controlling what is taught and learnt, with a compliant learner. In contrast, 'design for learning' stems from a constructivist perspective in which the focus is on the learner and the learning context with resources and technology seen as supporting learning within an ecological space. Design for learning acknowledges the central role of the student, their learning situation, their agency, autonomy and experience (Goodyear & Dimitriadis, 2013).

The theoretical stance adopted in this research aligns with the notions of postdigital and networked learning (Gourlay et al., 2021; Hodgson & McConnell, 2019; Jandrić et al., 2018; Knox et al., 2020; Ryberg & Sinclair, 2016) in that the inquiry seeks to explore issues through critical reflexivity and by understanding that collaborative and community definitions in networked learning incorporate the complex sociocultural and sociomaterial connections of postdigital learning.

The opportunity to undertake research into what constitutes productive, hybrid learning environments in higher education contexts using a multiple case study approach during the Covid-19 pandemic was unique. At this time, urgency was required in the redesign of courses to enable education programmes to continue and there were many impacts on teachers and learners. This real-world research inquiry sought to understand what characterises productive, hybrid learning environments in health disciplines in HE by exploring three course designs in the health disciplines at a New Zealand university.

To discover how design for learning might incorporate principles of networked learning in postdigital, hybrid learning contexts, this thesis takes a social constructivist stance to consider diverse health education contexts. The findings offer an analysis and interpretation of data surrounding these courses to better understand how to create productive, hybrid learning environments.

1.2 Research Aims and Questions

This doctoral research takes a multiple case study approach (Stake, 2006) to investigate networked learning elements in three undergraduate health courses offered in the healthcare division of a higher education institution in Aotearoa New Zealand. It explores the experiences and insights of students and academics (educators, learners, designers and supporting staff) in identifying features of course design contributing to productive learning environments. The term ‘productive’ denotes learning situations in which those involved are concerned with collaborative and co-constructive activities resulting in the creation of artefacts, advancing knowledge development and supporting self-discovery (Carvalho & Goodyear, 2020) and acknowledges the role of teachers in contributing to productive learning environments.

This is the first study to explore what students and teachers in Aotearoa New Zealand characterise as productive, hybrid learning environments in higher education health contexts. The purpose is to identify the characteristics of productive, hybrid learning environments to inform design for learning for courses in higher education that prepare students for professional practice in health.

The primary research questions for this study asks “What are the characteristics of productive, hybrid learning environments in higher education undergraduate health contexts?” It explores this by asking:

- How do students and academic staff characterise productive learning activities within hybrid learning environments?
- How do learning design elements, in hybrid learning environments, influence and support student experiences?

These questions and subsequent findings will be considered through the philosophical paradigm of social constructivism (Creswell & Creswell, 2023), incorporating ecological perspectives in education and te ao Māori (Māori worldview) lens in design for learning to provide a holistic understanding of productive, hybrid learning environments in HE health contexts (see Chapter 3).

1.2.1 Terms and Definitions

The definitions of terms used throughout this thesis are offered below.

- ‘Postdigital perspective’ signifies a move beyond the dichotomy of digital/analogue, to acknowledge the messy and unpredictable entanglements that characterise contemporary human interactions with technology (Jandrić et al., 2018).
- ‘Ecological perspective’ acknowledges the complexity of learning contexts encompassing diverse, entangled, non-linear and emergent aspects (Blaschke et al., 2021; Damşa & Jornet, 2016; Fawns et al., 2019).
- ‘Networked learning perspective’ identifies the key influence of technology to facilitate connections in learning communities that enable learners and teachers to share knowledge and expertise in a collaborative and reciprocal manner (Gourlay et al., 2021; Hodgson & McConnell, 2019).
- ‘Learner’ and ‘Student’ are used interchangeably in HE teaching and learning contexts, however, I acknowledge critique of the use of ‘learner’ (see Chapter section 3.5.1). Biesta (2019) argues an important semantic distinction with the term ‘students’ indicating the ability to experiment, create, try, fail and consider the big issues facing humanity.
- ‘Academic staff’ is used to describe the participants who are involved in the learning and teaching of students, and includes teachers, lecturers, tutors, writing advisors who teach writing skills, and health librarians who teach database search and retrieval skills.
- ‘Productive’ and ‘to produce’ denotes to create and not to consume, and includes self-realisation, identity formation and knowledge building (Carvalho & Goodyear, 2014).
- ‘Sociocultural’ recognises learning is influenced by the social and cultural dynamics occurring in the learning space (Jandrić et al., 2018).

- ‘Sociomaterial’ recognises learning is influenced by the context, by human and non-human aspects, and by the variety of interactions occurring in the learning space (Jandrić et al., 2018).

This research is situated in the context of Aotearoa New Zealand and acknowledges the enriching contribution of indigenous knowledge and mātauranga Māori (Māori worldview) perspectives. A glossary of Māori kupu (words) is provided (see pp. xv).

1.3 Rationale for this Study

At the beginning of this research in late 2018, the Covid-19 pandemic had not yet occurred. During data collection over a 24-month period between 2021 and 2023 the pandemic had taken hold across the world necessitating restrictions in many countries to contain virus transmission. The effect on HE in Aotearoa was to move courses rapidly online with limited/no on-campus teaching and limited/no movement between cities impacting the ability to continue teaching a course. With teachers and students involved in healthcare, including clinical learning experiences, there were additional challenges as hospitals and health organisations necessarily prioritised patient care over student education, particularly in the early phases of the pandemic. For courses already designed for full or partial online delivery, the transition required was minimal. However, for courses delivered on-campus and co-located in a classroom, this urgent pivot to online delivery posed significant challenges for teachers as they sought to establish the continuity of the course.

Educators reconfigured their teaching for digitally-mediated delivery. Some courses’ adjustments involved moving previously taught content to a Learning Management System, e.g. talking head video. Others considered which formats were appropriate for specific content and purposefully reconfigured. There was a concerted effort to make connections with students to provide support during this uncertain period. As the HE sector adjusted to changing lockdown restrictions and the eventual lifting of these, a ‘new normal’ became apparent.

The prevailing perspective in research has been to compare face-to-face learning with online learning (Bayne et al., 2020). This has created a false dichotomy that has failed to account for nuances in existing learning environments. Within a face-to-face session, a teacher may link to web resources, for example, to a YouTube video, to demonstrate content or might refer to the LMS course resources. Simultaneously, students might access the LMS resources on their devices or use a printed resource. The overarching notion that face-to-face indicates physical proximity, physical artefacts and an 'in-person' experience in comparison to the online learning environment denoting an absence of tangible connection, belies the hybrid nature of learning in any environment. These complex, messy and enmeshed examples of teaching and learning are key aspects of a postdigital perspective yet they are not well understood.

1.4 Researcher Positionality and Background Experience

Throughout my life I have had a keen interest in learning and teaching. In my professional nursing context, I have always sought to support new staff or students to gain skills to help them thrive in complex clinical environments. This focus on supporting staff was recognised by a previous employer who offered me a position as a clinical educator with a focus on refreshing an existing course for new-to-operating-room nurses. Support for my ongoing postgraduate studies enabled me to complete my master's research looking at ways to provide targeted professional development for staff who were new to perioperative (preoperative, operative and post operative) hospital surgical departments.

These experiences, associated with my interest in digital technologies, enhanced my skills in designing and facilitating courses in online learning environments and this period saw our organisation's monumental shift from primarily face-to-face professional development to a blended delivery of courses. During this period, my colleagues and I identified the most appropriate format and context for differing learning activities and acknowledged the benefits, challenges, and organisational imperatives necessary for our staff to

complete online learning activities available 24 hours per day (Green & Huntington, 2017).

My master's research journey led me from an awareness of andragogical principles of adult learning (Knowles et al., 2011) to a recognition of the need to advance a heutagogical approach prioritising learner agency and autonomy (Blaschke, 2012). This doctoral thesis has helped to shape my understanding of teaching and learning in HE health contexts. Interviewing staff and students and gaining insights into their perspectives while reviewing literature and analysing theories and frameworks has helped me to unpack some of the complexity of productive, hybrid learning environments and find aspects that can readily be adopted in my own and others' teaching settings.

1.4.1 Lived Experiences

This research has grown out of my lived experience of teaching in HE undergraduate health contexts before, during and after the Covid-19 pandemic. Prior to the pandemic, the design for learning in one of my courses might have looked like a group activity typical in HE contexts (see Figure 1.1).

Figure 1.1

Pre-Covid-19 Group Activity

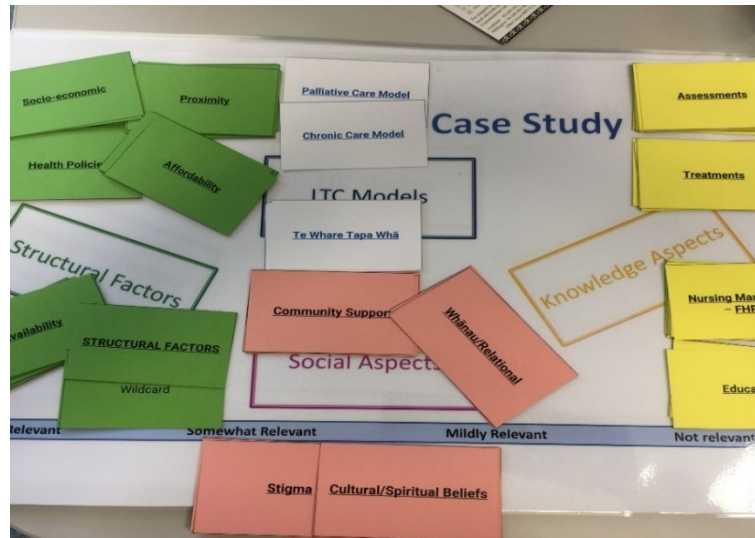


Students ($n = 45$) were presented with a person's life story and as a group they prioritised health aspects for that person in the context of their whānau (family)

and developed a plan of care. Their organisation of information looked something like this (see Figure 1.2).

Figure 1.2

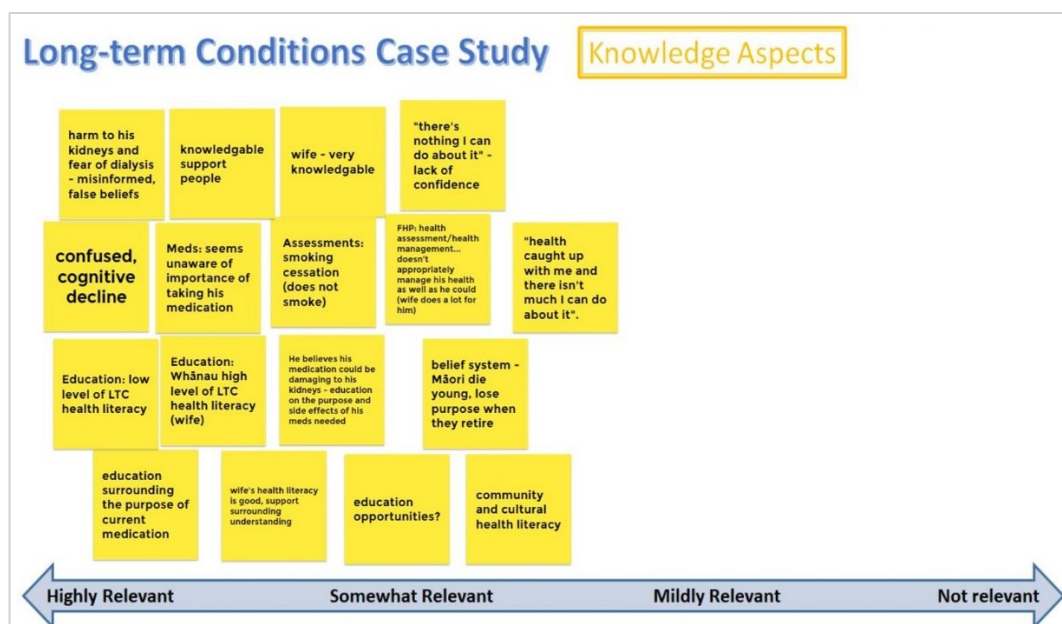
Patient Information Sorting with Cards



When the first Covid-19 lockdown occurred, I re-designed this course and moved the students ($N = 140$) into a Zoom room and in breakout room groups they collaborated and edited a Google JamBoard to prioritise the information from the patient story (see Figure 1.3).

Figure 1.3

Patient Information Sorting on Google JamBoard



This successful rapid, pivot to fully online delivery was supported by a myriad of factors. The course design already incorporated a hybrid approach whereby some learning material had been formatted for pre-learning using the LMS platform. My skills in teaching and learning in online environments had been developing for some years and my teaching team colleagues were willing to collaborate in creating a learning environment that would support students to continue their learning despite pandemic restrictions. This experience sparked my interest in gaining a deeper understanding of design for learning and how multiple elements combine to influence learning activity. As I embarked on my doctoral thesis, what characterised hybrid productive learning environments became my main focus.

1.4.2 Research Paradigms

In this doctoral research the ontological perspective is one of multiple views of reality, where what is seen and understood depends on individual perceptions mediated through social interaction. The epistemological standpoint is social constructivist with the focus on both the social nature of human experience and the individual perspectives on interactions (Creswell & Creswell, 2023). Meaning was inductively generated (Creswell & Poth, 2018). By adopting a multiple case study approach (Stake, 2006), it was possible to explore and gain insights into student and teacher perspectives on productive, hybrid learning environments.

An axiological view acknowledges my role in this research as value- and bias-laden, which Creswell and Poth (2018) contend is essential in qualitative research. As such, the analysis and interpretation of the research findings are influenced by my long-standing interest in hybrid and innovative learning and willingness to be an early adopter of digital technologies – testing new learning ideas and innovations. I am especially interested in the perspectives of others – teachers and students in HE undergraduate health courses – with a view to determining what they think is characteristic of productive, hybrid learning environments.

The timing of this doctoral research aligned with an opportunity to undertake research on teaching and learning in a time of rapid change. The systematic review of literature includes publications from just prior to the pandemic and captures what was published during the pandemic response. The three cases in this multiple case study present the perspectives of those involved in the emergency response directed by Government and the policies affecting those in health and educational settings ultimately related to containing the virus. This research provides new knowledge and insights into the influence of design for learning decisions and the effect this had on both teachers and learners.

1.5 Thesis Structure

This thesis is organised into nine chapters. Chapter one introduces the topic and research purpose - to better understand the characteristics of productive, hybrid learning environments in higher education (HE) health contexts.

Chapter two presents a systematic review of the literature to synthesise evidence of hybrid learning environments in HE undergraduate contexts that focus on nursing and social work. Refer to chapter two, section 2.2.3.4 for the rationale to exclude literature focused on pharmacists, bioscientists and chemists. The pharmacology course was undertaken by nursing students (172 of 175). The period between 2019 and 2024 included publications before, during and immediately after the initial responses to the Covid-19 pandemic. The literature review was conducted using a framework synthesis approach, mapping data to the Activity-Centred Analysis and Design (ACAD) framework and focused on interdisciplinary HE undergraduate contexts of nursing, pharmacology and social work.

Chapter three outlines the theoretical underpinnings of this research and explains the reasons for taking an ecological approach to learning and teaching, acknowledging the human and non-human aspects influencing complex learning ecosystems and proposes a novel design for learning framework for Aotearoa healthcare educators incorporating elements of matauranga Māori in the application of the ACAD framework.

Chapter four outlines the multiple case study methodology and methods used in this research and details the strategies used to ensure trustworthiness and validity in the reflexive thematic analysis.

Chapters five, six and seven present the findings from each of the cases: Case study one – Nursing (CS1), Case study two – Pharmacology (CS2), and Case study three – Social Work (CS3).

Chapter eight integrates the findings from the cross-case analysis to answer the primary research question: What are the characteristics of productive, hybrid learning environments in higher education undergraduate health contexts?

The final chapter nine concludes the thesis by synthesising the key findings, discussing the original contribution to knowledge and potential limitations, and suggesting areas for future research and key recommendations for educational designers.

Chapter 2. Literature Review

2.1 Introduction

Design for learning in undergraduate higher education (HE) health contexts is complex and diverse because it must consider graduate practice that improves patient health outcomes. The past six-years have added complexity to maintaining learning in HE as educators have sought to manage the effects of an unprecedented, worldwide Covid-19 pandemic. This doctoral research began just prior to the pandemic and consequent disruption in HE and offers a unique view on health education contexts before and after the pandemic.

The purpose of this interdisciplinary systematic literature review was to search the international peer-reviewed literature for examples of hybrid undergraduate HE health contexts identified as productive. To clarify, in searching the literature for productive learning environments, the focus was on sources where the students, teachers, learning designers or support staff identified evidence of emergent learning and enhanced knowledge. 'Hybrid learning' relates to educational design and practice in postdigital learning spaces, encompassing varying arrangements of digital and material elements, online and face-to-face spaces, formal and informal learning and supports coexistence of such variations (Fawns, 2019; Gil et al., 2022; Goodyear & Carvalho, 2020).

This chapter presents the findings of a systematic review of the literature to synthesise evidence of the use of hybrid learning environments within HE in general, and in health education contexts that focus on nursing and social work education. The ontological stance of multiple views of reality and epistemological perspectives of social constructivism in the literature, which have influenced the design of this multiple case study research, are discussed in Chapter 4 Methodology.

This research incorporated the meta-theoretical Activity-Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014; Goodyear et al., 2021) enabling examination and analysis of complex learning situations (explored further in Chapter 3, section 3.8.1). Later, during the case study data analysis

phases the novel Aotearoa Design for Learning (ADL) framework was developed to analyse this complexity from an indigenous-honouring, comprehensive perspective and is further discussed in Chapter 3, section 3.9.

The following questions guided this systematic review and doctoral research:

What are the characteristics of productive, hybrid learning environments in higher education undergraduate health contexts?

- How do students and academic staff characterise productive learning activities within hybrid learning environments?
- How do learning design elements, in hybrid learning environments, influence and support learners' experiences?

In the next section I describe the methods and processes followed in this literature review. I then present and discuss the findings of the literature review.

2.2 Methods

The results of the literature search were analysed using the ACAD framework (Carvalho & Goodyear, 2014). We were specifically looking for sources that demonstrated the coalescence of the ACAD components: Epistemic, Social and Set design elements resulting in co-creation of knowledge and learning that exceeded the study's reported learning objectives or aims (these will be described in Section 2.2.3). In this study, the key features of productive, hybrid learning environments include an assemblage of epistemic, social and set elements, where there is encouragement for creation rather than consumption of information, and a building of understanding, as educators nudge learners towards hoped-for but not certain outcomes.

Within this doctoral research productive, hybrid learning environments are inherently connected to living and learning in a postdigital world where technology is part of everyday experiences (Jandrić et al., 2018). A postdigital stance calls for us to consider human-technology relations and to critically appraise our assumptions of digital technologies (Knox, 2019). Productive, hybrid environments are those that address diversity in their design for learning

and where “the whole is greater than the sum of its parts” (Aristotle) because individual components are drawn together within a learning context create knowledge and actualise learning.

2.2.1 Framework Synthesis

This systematic review of the literature adopted a Framework Synthesis approach to analysing the literature. This approach allowed for examination of the alignment of identified themes with an existing framework, as well as the possibility and flexibility of conceptual revisions to the framework if and when new themes emerged. The Framework Synthesis provided clear evidence of the processes used to appraise, analyse and report on findings (Brunton et al., 2020). The analysis involved five stages: familiarisation, framework selection, indexing, charting, mapping and interpretation. An overview of these stages is presented in Figure 2.1.

Figure 2.1

Stages of Framework Synthesis

<p>Familiarisation Research question formation Searching for literature Becoming aware of literature content</p> <p>Framework selection ACAD Refining Research Questions</p> <p>Indexing Identifying inclusion/exclusion criteria Title and abstract screening Narrowing to final yield Populating PRISMA Creating hierarchy of tags in NK Reflexive refinements of research questions</p> <p>Data extracting Mapping data to ACAD framework Identifying voice – Student, Teacher, Author, Overall comments Reflexive refinements of research questions</p> <p>Mapping & interpretation NK Spreadsheet for analysis Review of data, creating codes (Repeated) Data analysis phases</p>

(Source: Adapted from Brunton et al., (2020) Innovations in Framework Synthesis as a systematic review method.)

2.2.2 Familiarisation

Familiarisation occurred at the beginning of this doctoral study with appraisal of the literature pertaining to hybrid learning environments. This stage included conversations with supervisors and colleagues who helped to identify research questions. Through the familiarisation process I became aware of the ACAD framework as a validated analytical framework that was suited to analysing learning environments in HE health contexts (Carvalho & Goodyear, 2014). In Chapter 3 Theoretical Frameworks (section 8) learning design frameworks are appraised and the selection of the ACAD framework as the preferred framework for use in this study is justified.

2.2.3 Framework Selection

The elements in the ACAD framework offered clear definitions, *a priori* themes, against which analysis takes a deductive approach to identify and map data. The Framework Synthesis approach is flexible and allows for the inclusion of an inductive analysis if data is found that does not logically fit the existing framework. This flexibility ensures that all data can be mapped and allows for the possibility of further adaption of the existing ACAD framework if this is required (Carroll et al., 2011). In a practical sense, the ACAD framework provides a scaffold upon which analysis of each of the cases can be reviewed, compared and aligned. As part of this process, I developed a series of codes and the ACAD codes and definitions are shown in Table 2.1, The Coding Framework.

Table 2.1*The Coding Framework*

ACAD codes	Definition
Set	The design of material and digital elements in hybrid environments (both online and face-to-face) including tools, resources and artefacts, the furniture or learning items used and how items are positioned in space.
Epistemic	The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, and the provision of resources for meaning-making.
Social	The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration – in the group space or in assessment, and the role of the learner as a recipient, participant or creator of knowledge.
Co-creation	Co-creation of knowledge emerging within a learning event. It relates to the agency of learners and their ability to interpret and chose what to do.
Productive	Insights beyond the original study aims/objectives with respect to ACAD elements.

2.2.4 Indexing

The indexing stage involved searching, screening and extracting data relevant to the ACAD coding elements (Brunton et al., 2020). A systematic review of literature was undertaken to examine multiple sources of literature, appraise, analyse, and summarise the research findings in a rigorous, transparent and replicable manner (Whittemore et al., 2014). The process of developing and documenting the search strategy was informed by the 12-step method outlined by Kable et al. (2012). This involved identifying key terms and searching selected databases to identify peer-reviewed, date-limited sources. Six bibliographic databases relevant to HE and healthcare were searched (Scopus, EBSCO – Including CINAHI, Education Source, Eric, Web of Science MEDLINE and A+ Education) for appropriate and relevant literature from 2019 through to 2024. The breadth of databases was intended to capture sources conducted in health education contexts that might be published in either education or health related journals. This timeframe was chosen to capture research conducted

prior to, during, and post the Covid-19 pandemic to provide insights on the influence of this global event on undergraduate HE health contexts.

The research questions and key concepts were identified and discussed with colleagues, the supervisory team, and the health information technology specialists at the Massey University library. This enabled selection of the most relevant databases and supported the creation and refinement of search term strings to be used. Three concept areas were identified as pertaining to undergraduate nursing, social work and bioscience focused on pharmacology for nursing education:

- The learning medium,
- The learning environment,
- Included perspectives, e.g., ecological, cultural, indigenous, diverse, inclusive or productive.

Literature search and study selection

The following search terms and phrases were used for searching published literature to identify potentially relevant research:

- nurs* OR RN OR “social work*” OR pharmac* OR bioscience OR chemist* OR health personnel OR social services OR caseworker*
- **AND** (“higher educat*” OR “tertiary educat*” OR undergraduate OR bachelor OR baccalaureate OR colleg* OR university* OR “post-compulsory education” OR “postsecondary education”)
- **AND** (Virtual OR augmented OR mobile* OR online OR interactive* OR device* OR digital OR simulation* OR technolog* OR ‘mixed realit*” OR computer* OR laptop OR “simulated environment” OR avatar* OR multimedia)
- **AND** (learn* OR teach* OR educat* OR hybrid OR hyflex OR blended OR synchronous OR Asynchronous OR mLearn OR eLearn OR face-to-face OR f2f OR co-construct* OR “web-based course” OR distance OR “instructional design” OR “universal design for learning” OR udl)
- **AND** (ecolog* OR cultur* OR diversit* OR inclusive* OR productive)

Additionally, Medical Subject Headings (MeSH) terms were used in Medline and CINAHL databases as these terms match for content rather than text only. Subject headings were used to check variations in terms. All were captured and then the list was reduced to relevant headings for the focus of this research. This process decreased the precision of the search but increased the sensitivity of the search threads.

Literature selection

The initial database yield ($N= 2020$) sources included literature reporting on nursing, social work and bioscience courses in higher education; a range of qualitative studies, quantitative studies, mixed-method studies, systematic reviews, and integrated reviews; and all were published between 2019 and 2024 in peer-reviewed journals.

Given the pervasive nature of hybrid learning environments throughout the world, and the wide-ranging effects of Covid-19 on HE contexts, there was much to be learnt from different countries. Twenty-one articles published in nine countries: Australia, Bulgaria, Canada, China (Hong Kong), Norway, Portugal, Spain, Sweden and the USA were reviewed.

Inclusion criteria / Exclusion criteria

Inclusion criteria:

The inclusion criteria literature included undergraduate university and HE courses for nursing, pharmacology and social work; included either educators or designers; identified a hybrid learning environment presenting the integration of at least 2 modalities (see ecological standpoint below); included Epistemic (knowledge), Set (resources/tools), Social arrangements and Emergent learning AND discussion of the connections between these elements; and must have more than 50 percent focus on enablers (this became irrelevant during full text screening, with tightened definition of 'productive', see Section 2.2.3.4).

Exclusion criteria:

Exclusion criteria included not published in a journal; the source was not an applied project / case study: e.g. review articles, SR, IR, Scoping review,

Overview, Editorial / Opinion; no mention of learning design research; full text unavailable; not in English.

The final inclusion/exclusion criteria aligned with the target populations that were the focus of the multiple case studies discussed in chapters five to seven. However, to achieve this, the search terms needed to be refined to remove the terms "pharmac* OR bioscience OR chemist*" and an adjustment was made to the exclusion criteria to filter out healthcare profession-led courses (i.e. pharmacy, bioscience and chemistry) that did not match the target case study populations (nursing and social work students and educators).

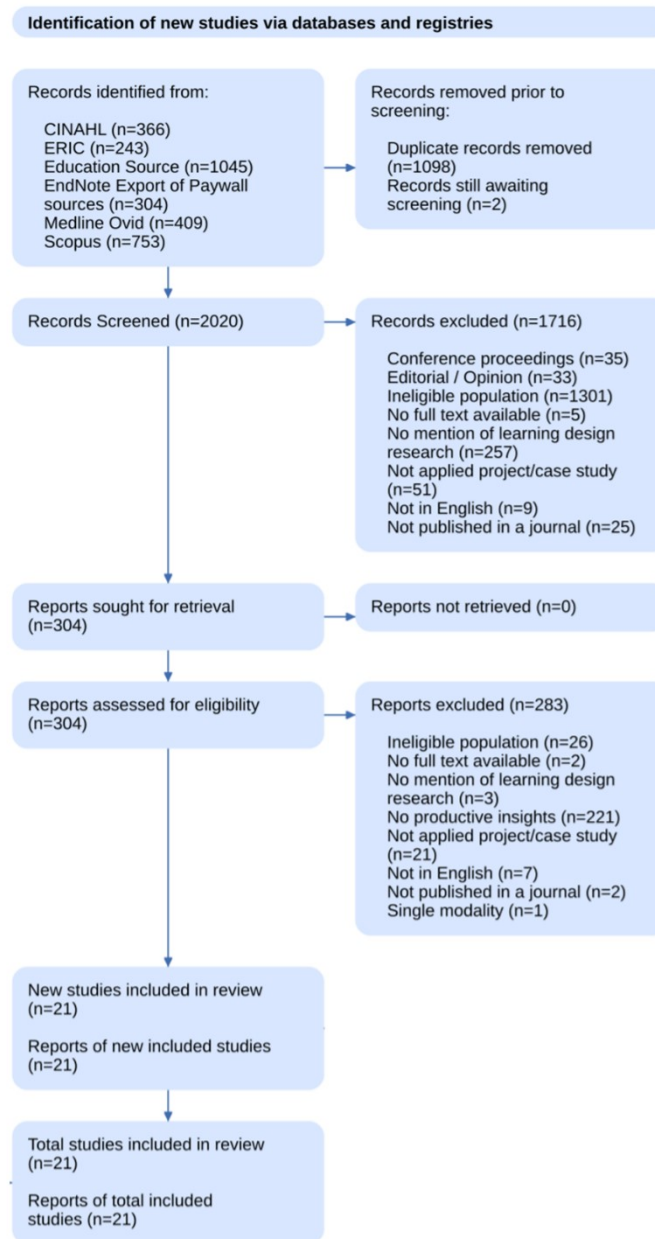
Quality assessment and data extraction

To manage the database search results and assess their relevance to this doctoral research it was necessary to use a process that was systematic, easy to use, and understood by the reviewers (the researcher and doctoral supervisor).

Nested Knowledge (NK) systematic review software was used to facilitate dual two-pass screening of title and abstracts for initial yield (2020 sources) and later, full text screening by the two reviewers. The software supports quality control by capturing screening decisions made by reviewers and adjudication of screening differences. A key benefit of using this software is that the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) process and diagram is continually developing and being recorded as screening proceeds (see Figure 2.2). PRISMA protocols provide transparency of the process, what the reviewers do and what is found (Page et al., 2021) as was the case in this research.

Figure 2.2

PRISMA Hybrid Learning Environments Diagram



A key feature of systematic literature reviews is the importance of clearly identifying the methods used, the process followed, resources used, and decisions made so that the rigor of the analysis, synthesis and findings can be assessable, transparent and replicable (Dekkers et al., 2022). There was a clear value in using two reviewers throughout the process, particularly to highlight and then resolve any differences of interpretation. Through the process of the review it became apparent that the use of broad inclusion and exclusion criteria had the potential to advance sources that might otherwise have been

excluded. For example, we narrowed down the population to nursing and social work and removed pharmacology and pharmacy as the latter is a distinct, well-defined profession and those courses typically included students who were not within the target population. During the title and abstract screening phase, the most common dissonances related to eligible populations and the inclusion or lack of design for learning details in the research. This doctoral research was focused on design for learning applied in productive undergraduate HE hybrid learning environments. Research that reported on surveys without apparent application of the findings was excluded.

During each phase of the systematic literature review the importance of refining the inclusion / exclusion criteria became apparent to ensure that the final yield was specific to the research questions, population, phenomenon of interest, context and outcomes. Additionally, clarification of inclusion / exclusion criteria supported clear and congruent decision-making for the reviewers. This was evident prior to the start of the full text screening stage as the reviewers used the ACAD codes to identify agreed screening concepts: epistemic, social, set, co-creation, outcomes, and productive.

Carroll et al. (2013) emphasise the importance of clarifying definitions of the *a priori* coding so that the reviewers can independently and consistently interpret the source data to the relevant code. To support consistent interpretation, two reviewers initially coded 11 sources against the ACAD codes identifying productive elements. This resulted in 90 percent of sources being promoted to the full-text reading stage.

As a result, the review criteria were refined and led to recognition of the importance of productive insights as a key inclusion criterion. Defining the word productive was at the crux of this process. Our final definition for 'productive' in this systematic literature review was creation of knowledge in learning context rather than consumption, and included self-realisation, identity formation and knowledge building (Carvalho & Goodyear, 2014). By keeping to this definition when reviewing a source's aim, objectives and outcomes the source could be excluded if there were no insights beyond what the researchers hoped to achieve (i.e. in terms of the ACAD codes, insights beyond the anticipated Set,

Social, Epistemic and Emergent learning). This refined inclusion criteria advanced 10 percent of the sources that were viewed and was useful for a potential full text screening result of the 304 advanced sources. Throughout the indexing stage there was reflexive refinement of the research questions for conciseness and a clearer focus.

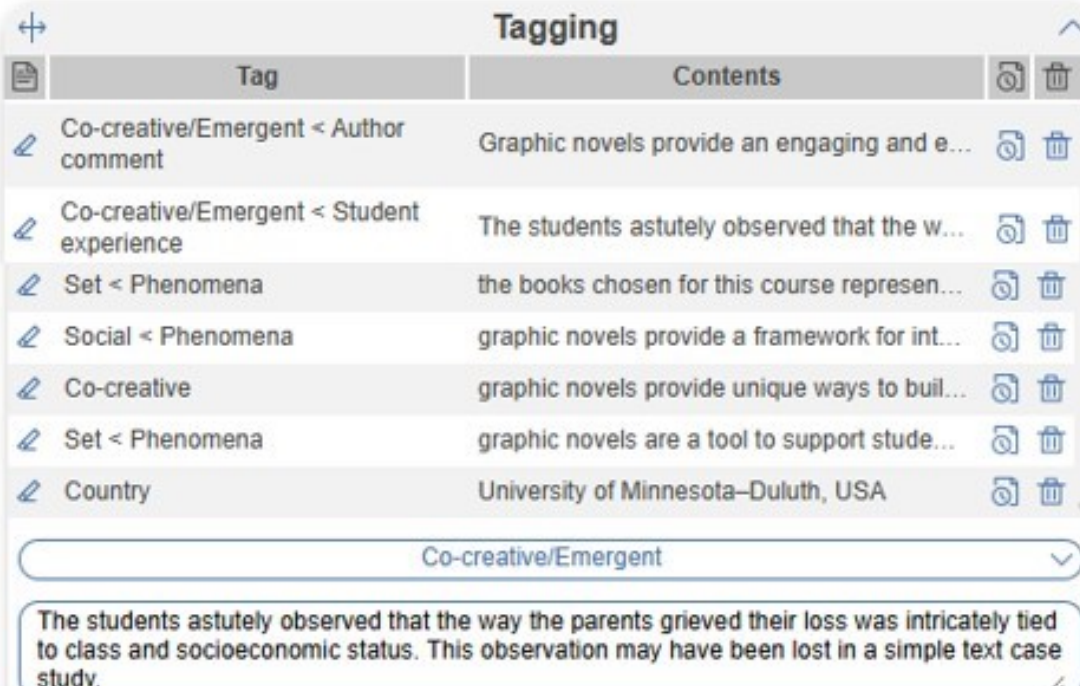
Of the 21 sources seven were from the United States, six from Australia, two from Sweden, and one each from Bulgaria, Canada, China (Hong Kong), Norway, Portugal and Spain. Seven sources were from the discipline of social work; 11 from nursing and three were interdisciplinary. The sources were primarily qualitative, four were mixed methods and one was quantitative (see Appendix 2).

2.2.5 Data Extracting

Using the NK software, a hierarchy of key terms was developed, based on the ACAD codes, to enable tagging of relevant source data to these terms (see Figure 2.3). The ACAD codes were organised into tags aligned with students, teachers, authors and overall aspects of that phenomenon (see Appendix 3.1 NK Tag Hierarchy).

Figure 2.3

Tagging Format with Data in Nested Knowledge



Tag	Contents
Co-creative/Emergent < Author comment	Graphic novels provide an engaging and e...
Co-creative/Emergent < Student experience	The students astutely observed that the w...
Set < Phenomena	the books chosen for this course represen...
Social < Phenomena	graphic novels provide a framework for int...
Co-creative	graphic novels provide unique ways to buil...
Set < Phenomena	graphic novels are a tool to support stude...
Country	University of Minnesota–Duluth, USA

Co-creative/Emergent

The students astutely observed that the way the parents grieved their loss was intricately tied to class and socioeconomic status. This observation may have been lost in a simple text case study.

The tagged data were extracted from NK and exported into an Excel spreadsheet which was then sorted into separate sheets containing tags and data related to each of the ACAD codes. Using the NK tag hierarchy as a guide, potential code columns were created for the data sections relevant to students, teachers, authors and overall phenomenon.

2.2.6 Data Analysis: Mapping and Interpretation

The epistemological stance taken in this doctoral research is social constructivism in which meaning is inductively generated from the data (Creswell & Creswell, 2023). This standpoint has guided the approach taken to understand the literature that has been found and reviewed. The analysis aligns with my interpretivist paradigm which takes a ‘bottom-up’ approach to the process, with data from the literature informing and reinforcing my interpretation of the codes, generation of initial and potential themes leading to final themes being presented and discussed (Braun & Clarke, 2022).

Using the data extraction tables in Excel, data were analysed using Braun and Clark’s (2022) six phases of reflexive thematic analysis. The analytical process

for reflexive thematic analysis includes six phases: familiarisation with the dataset; data coding; initial theme generation; theme development and review; theme refining, defining and naming; and writing up.

Phase 1: Familiarisation with the dataset occurred during the reading and tagging within NK.

Phase 2: Data coding. In alignment with Braun & Clarke's (2022) phase two coding recommendation, the source data were coded in two separate rounds, in different directions to allow comparison of the resulting codes from each round (see Appendix 3.2). This process revealed new detail to create a fuller summary of the data. By returning to the data, I was able to reconsider my coding and review it in a different order as a further check to determine if any aspect had been missed on the first round. Braun and Clarke recommend this level of engagement with the data to enable consideration of thick layers of meaning beyond what becomes apparent on the surface. Coding data can focus on applying labels rather than thinking in new and potentially, unexpected ways to support breadth and depth of analysis (Braun & Clarke, 2022). The distilling of the codes from each round resulted in the code that captured the meaning best progressing to the Initial themes and codes table (see Appendix 3.3).

Phase 3: Initial theme generation. In sorting through codes for the codes table, I generated initial themes, aligning with Braun & Clarke's (2022) phase 3 process. In addition, I included subheadings relevant to each theme before discussing, justifying and confirming themes with my supervisory team. This assisted in ensuring my methodological process was robust and facilitated the removal of any duplication of codes. The subheadings were revised during the process; some were subsumed into other sub-headings and new sub-headings were created when there was evidence to support this decision (see Appendix 3.4). During the creation of codes, I distilled and summarised the notes on each source.

Phase 4: Theme development and review. The fourth phase (Braun & Clarke, 2022) focuses on developing and reviewing the themes and searching for central organising concepts that unite each theme. The process of moving

between article notes to codes and back to the data in context enabled initial theme ideas to be developed further (shown in Appendix 3.5). Each theme was colour coded along with each code and its relevant data. Colour definition supported tracing the origin of the code and data and was a very useful strategy during literature review writing when checking the location, context and citation requirements of the source data. The resulting seven initial theme documents, defined by a specific colour, enabled identification of each of the associated sub-headings, including Overall, Student, Teacher and Author related code and data subjections.

Phase 5: Refining, defining and naming themes. I reviewed my initial theme generation documents (see Appendix 3.5) and worked with the codes and data rows, moving and reorganising them into groups around a central organising concept. The visual colours supported the manipulation of each piece of data and despite the movement from initial coding locations, there was sufficient information to return to the original location of the data in the source article to review context and meaning. The result of phase 5 refining and defining was to name potential themes with data grouped around a central organising concept (see Appendix 3.6). The process of mapping and interpreting the literature data set has been described and has followed recommendations for Framework Synthesis (Brunton et al., 2020) in the use of the ACAD codes to map the literature, and for reflexive thematic analysis (Braun & Clarke, 2022) to provide “a rich, contextualised examination” (p. 120) of productive, hybrid learning environments to contribute to understandings based on evident in the literature.

Phase 6: Writing up the findings. The results of data analysis are presented in section 2.3.

2.2.7 Quality Assessment and Confidence in Review Findings

The Cochrane qualitative Methodological Limitations Tool (CAMELOT) was used to appraise methodological limitations in the literature included in this systematic literature review (Munthe-Kaas et al., 2024). The authors identify the purpose of assessing methodological limitations to provide assurance of the trustworthiness of the review findings derived from a wide variety of sources.

The CAMELOT tool includes 12 domains, which fall into two main categories: Meta domains and Method domains. The 21 sources in the final group for inclusion in this review were assessed against these 12 domains

Meta domains include:

- Research aim and questions
- Stakeholders
- Researchers
- Context

Method domains include:

- Research design domains
 - Research strategy
 - Ethical considerations
 - Equity, diversity and inclusion considerations
 - Theory
- Research conduct domains
 - Participant recruitment and selection
 - Data collection
 - Analysis and interpretation
 - Presentation of findings

For further detail see Appendix 1 Definitions of CAMELOT domains (Munthe-Kaas et al., 2024, p.11).

Confidence in the systematic literature review's findings were assessed using the Grading of Recommendations Assessment, Development and Evaluation Confidence in the Evidence from Reviews of Qualitative Research (GRADE-CERQual) framework (Lewin et al., 2018; The GRADE-CERQual Project Group, 2018) which assesses four components: *methodological limitations* – related to the research design or researcher conduct within the primary studies; *coherence* – which focuses on the alignment and support between primary study data and the literature review synthesis; *adequacy* – assesses the richness and volume of primary study data to support a review finding; and

relevance – assesses the alignment between data from the primary study with the review findings in relation to the context of the review’s research questions.

In combination, these four component assessments allow a reviewer to make a judgment about the overall confidence in the literature review findings (Lewin et al., 2018). Confidence refers to the degree to which the synthesis findings provide a “reasonable representation of the phenomenon of interest” (The GRADE-CERQual Project Group, 2018, p. 4) and are differentiated as either high, moderate, low or very low. The GRADE-CERQual process begins with all review findings rated as high confidence. This level of confidence is then downgraded as issues in any of the four CERQual components are identified. The assessment of confidence in the findings of this systematic literature review has been graded at moderate confidence for each of the findings (see Table 2.2 iSoQ Summary).

Table 2.2*iSoQ Summary*

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Summarised Review Finding	GRADE CERQual Assessment of Confidence	Explanation of Overall Assessment	Contributing Studies
Establishing the learning environment involved preparing resources, students, faculty and the learning environment. It included teachers modelling expected actions and behaviour and providing support for deep learning. There were many challenges for teachers to overcome including emergency rapid pivots to online, creating culturally safe spaces for learning, and acknowledging the challenges in using technology.	Moderate confidence	Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance	Archer-Kuhn et al., 2020; Baixinho et al., 2022; Bennett et al., 2022; Bridges et al., 2020; Carroll & Morse, 2022; Domyancich-Lee et al., 2022; Doran et al., 2022; Egonsdotter et al., 2020; Esposito & Sullivan, 2020; Fox & O'Maley, 2023; Jenssen et al., 2024; Kumpula & Krumwiede, 2023; Mattingly, 2021; McGovern, 2019; Mills et al., 2022; Moore & Campbell, 2021; Nunev, 2020; Plaza del Pino et al., 2022; Rambaree et al., 2023; Reid-Searl et al., 2019; Woodley, 2020.
Pedagogy, andragogy, heutagogy – an uncommon experience. The literature reported the importance of teachers understanding the underlying pedagogy, considering the specific needs of adult learners and looking for ways to increase learner agency. Students reported delight in unexpected freedom of choice.	Moderate confidence	Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance	Archer-Kuhn et al., 2020; Doran et al., 2022; Fox & O'Maley, 2023; McGovern, 2019; Nunev, 2020; Reid-Searl et al., 2019.

Summarised Review Finding	GRADE CERQual Assessment of Confidence	Explanation of Overall Assessment	Contributing Studies
<p>Effective teaching and facilitation give attention to sequencing and pacing of content and providing timely support with clear communication. For this to occur there must be consideration of professional development for faculty.</p>	<p>Moderate confidence</p>	<p>Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance</p>	<p>Archer-Kuhn et al., 2020; Baixinho et al., 2022; Bennett et al., 2022; Bridges et al., 2020; Carroll & Morse, 2022; Domyancich-Lee et al., 2022; Doran et al., 2022; Egonsdotter et al., 2020; Esposito & Sullivan, 2020; Fox & O'Maley, 2023; Kumpula & Krumwiede, 2023; Mills et al., 2022; Moore & Campbell, 2021; Rambaree et al., 2023; Reid-Searl et al., 2019; Woodley, 2020.</p>
<p>The contribution of conviviality in creating productive learning environments was evident in participant experiences of camaraderie, humour, empathy and a reported feeling of connectedness.</p>	<p>Moderate confidence</p>	<p>Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance</p>	<p>Archer-Kuhn et al., 2020; Bennett et al., 2022; Carroll & Morse, 2022; Esposito & Sullivan, 2020; Fox & O'Maley, 2023; Jenssen et al., 2024; Kumpula & Krumwiede, 2023; Moore & Campbell, 2021; Rambaree et al., 2023; Reid-Searl et al., 2019; Woodley, 2020.</p>

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Summarised Review Finding	GRADE CERQual Assessment of Confidence	Explanation of Overall Assessment	Contributing Studies
<p>Rich, realistic teaching and learning was seen as a prerequisite for students who would become healthcare professionals. Simulation was used to provide layers of reality that included patient experiences, low, medium and hi-fidelity. These resulted in deep learning through reflective and inter/intra-professional practice.</p>	Moderate confidence	<p>Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance</p>	<p>Archer-Kuhn et al., 2020; Baixinho et al., 2022; Bennett et al., 2022; Bridges et al., 2020; Carroll & Morse, 2022; Domyancich-Lee et al., 2022; Egonsdotter et al., 2020; Esposito & Sullivan, 2020; Jenssen et al., 2024; Kumpula & Krumwiede, 2023; Mattingly, 2021; McGovern, 2019; Moore & Campbell, 2021; Nunev, 2020; Plaza del Pino et al., 2022; Rambaree et al., 2023; Reid-Searl et al., 2019.</p>
<p>“I feel challenged and equipped” Researchers and participants reported the benefits of intentional challenges and productive struggles acting as catalysts for changes in perspective and the development of culturally safe practice. For learning to become transformational required critical reflexivity in learners.</p>	Moderate confidence	<p>Moderate concerns regarding methodological limitations, No/Very minor concerns regarding coherence, No/Very minor concerns regarding adequacy, and No/Very minor concerns regarding relevance</p>	<p>Archer-Kuhn et al., 2020; Bridges et al., 2020; Carroll & Morse, 2022; Doran et al., 2022; Egonsdotter et al., 2020; Fox & O’Maley, 2023; Mattingly, 2021; McGovern, 2019; Mills et al., 2022; Moore & Campbell, 2021; Nunev, 2020; Plaza del Pino et al., 2022; Reid-Searl et al., 2019; Woodley, 2020.</p>

The GRADE-CERQual overall level of moderate confidence was derived due to minor concerns in some of the sources in relation to methodological limitations, coherence, adequacy or relevance. The purpose of this systematic literature review was to inform design for learning and was not to develop evidence-based health policies or interventions, so in this instance an overall grading of moderate confidence is indicative of the review findings providing a reasonable representation of productive learning environments.

2.3 Findings

The purpose of this systematic literature review has been to identify the characteristics of productive, hybrid learning environments as they have been portrayed in the literature using the ACAD codes (see Table 2.1). The following section represents a methodical, transparent, robust and systematic analysis of the literature prior to, during and after the seismic changes that occurred in HE health contexts because of the Covid-19 pandemic. All the themes that emerged from the data fitted within the ACAD codes suggesting that the ACAD framework in its current state is a robust fit for the data analysis.

These six themes are: (1) 'establishing the learning space' captures the importance of preparation of resources, students, faculty, sequencing content and the teaching space; the significance of safe learning environments; (2) 'Pedagogy, andragogy and heutagogy' speaks to the importance of teachers having a thorough understanding of the underlying learning methods and practices, combined with an awareness of adult learning principles and the important heutagogical focus on learner agency; (3) 'effective teaching and facilitation' reports on the preparation of faculty to understand the pedagogy and the required student support; (4) 'The contribution of conviviality' emphasises the importance of affective elements within learning environments; (5) 'Rich, realistic teaching and learning' points to the importance of preparing students for graduate practice by including resources and experiences that align with this; and (6) 'I feel challenged and equipped' introduces the importance of intentional challenge to act as a catalyst for transformational learning. The specific characteristics of each theme are presented in Table 2.3.

Table 2.3*Literature Review Theme Summary*

Theme	Characteristics
Establishing the learning environment	Preparation of resources, students, faculty and learning environment; Modelling behaviour; Supporting deep learning; Overcoming challenges; Synchronous/Asynchronous; Scheduling; Safe learning environments
Pedagogy, Andragogy, and Heutagogy	Understanding pedagogy – methods and practices; Andragogy – adult learning principles; Heutagogy – Agency, Self-directed, Unexpected freedom; Future opportunities
Effective teaching and facilitation	Sequencing and pacing content; Appropriate support and timely communication; Faculty professional development
The contribution of conviviality	Camaraderie; Humour; Empathy; Connectedness
Rich, realistic teaching and learning	Rich, realistic, complex case studies; Simulation provides layers of reality; Fidelity; Patient experiences; Deep learning through reflective practice; Social dynamics of professional practice
“I feel challenged and equipped”	Transformational learning; Clinical challenges; Intentional challenge; Catalysts for changes in perspective; Productive struggle; Critical reflexivity; Culturally safe practice

Throughout the process of analysing the literature, the research intent was to make sense of the data and report on salient experiences, innovations and meanings evident in the dataset. The following discusses the themes of this reflexive analysis in more detail.

2.3.1 Establishing the Learning Space

Hybrid learning environments that are productive tend to emphasise the importance of preparing students for what to expect, such as: inquiry-based learning (Archer-Kuhn et al., 2020); Escape rooms (Carroll & Morse, 2022)); pre-trip briefing (Mattingly, 2021); the process of *yarning* and respectful engagement (Bennett et al., 2022). These types of preparation can heighten students’ awareness of the learning environment and serve to prime them for

learning. As such, preparation of students has the potential to decrease cognitive load in a learning situation.

In some studies preparation was specifically focused on familiarising students with the epistemic content (Bennett et al., 2022; Plaza del Pino et al., 2022), while Reid-Searl et al. (2019) augmented preparation to include guidelines for safe teaching and learning environments in MaskEd¹. Again, exposure to topic or context information can prime students' thinking ready for learning.

Design for learning also related to configuration of learning space including furniture with wheels to support room and group member transitions, and easy access to virtual environment (Bridges et al., 2020); materials packed into a large suitcase which were transportable across geographical regions and easily set up in a new learning space (Moore & Campbell, 2021). It might also include adaptations to spatial and relational interactions when moving to an online environment (Bennett et al., 2022).

Teaching resources came from a wide variety of sources, including: proprietary (Egonsdotter et al., 2020; Rambaree et al., 2023); educator designed – Mask-Ed (Reid-Searl et al., 2019); virtual simulations presenting videos of realistic obstetric scenarios (Esposito & Sullivan, 2020); online survey and polling resources such as – Lime Survey (Mills et al., 2022), PollEverywhere (Woodley, 2020), and online meeting tools such as the Zoom platform which support pre-brief activities before moving into breakout rooms (Carroll & Morse, 2022; Jenssen et al., 2024). The choices of teaching and learning resources allows for deliberate design for learning to align with the underpinning pedagogy, learning environment, student levels of knowledge and teacher prior experience, capability and expertise.

Several authors noted the importance of teachers and facilitators modelling expected or ideal behaviour, thereby building respectful relationships, decreasing power differentials (Archer-Kuhn et al., 2020; Bridges et al., 2020; Rambaree et al., 2023) and encouraging interactions to enhance trust in the

¹ MaskEd involves a knowledgeable, hidden educator, wearing realistic silicone props, responding spontaneously in a simulation session with students.
(<https://youtu.be/2UaG3lvsbOs>)

learning environments (Bennett et al., 2022; Fox & O'Maley, 2023; Woodley, 2020). Interestingly, modelling behaviour was often reciprocated by the students as they actively contributed to group learning in what was perceived by students to be safe and supportive learning environments (Bennett et al., 2022; Fox & O'Maley, 2023; Woodley, 2020).

A key feature of courses that led to clinical professions was the importance of preparing students for professional practice. This occurred by way of intentional design for interprofessional learning in which students learned from, with, and about, each other (Baixinho et al., 2022; Bridges et al., 2020), international collaboration (Jenssen et al., 2024; Kumpula & Krumwiede, 2023); and collegial and collaborative practice (Carroll & Morse, 2022; Doran et al., 2022; Egonsdotter et al., 2020; Plaza del Pino et al., 2022; Reid-Searl et al., 2019). These types of learning experiences were deemed productive as the interactions between students and teachers led to co-creative outcomes.

Productive, hybrid learning environments support deep learning through intentional design incorporating contextual factors such as: building on student's varying language and cultural knowledge (Fox & O'Maley, 2023), prior cultural experience (Mattingly, 2021), and extracurricular contexts (Nunev, 2020); student involvement in experiential and inquiry-based learning activities (Archer-Kuhn et al., 2020; Egonsdotter et al., 2020; Jenssen et al., 2024; Mattingly, 2021; Woodley, 2020); incorporation of a range of resources such as digital storytelling (McGovern, 2019), graphic novels (Domyancich-Lee et al., 2022), whiteboard graphical representations (Fox & O'Maley, 2023), and escape rooms (Carroll & Morse, 2022; Moore & Campbell, 2021). These diverse elements combined with impactful facilitation supported new and deep student learning.

A consistent aspect in the literature was the importance of overcoming challenges, highlighted by Esposito and Sullivan (2020) "Necessity is the mother of invention, and a pandemic demands innovation" (p. 524). This was evident in relation to video conferencing enabling clinical teaching and enhancing social presence and learning despite the disruptions of Covid-19 quarantine requirements (Esposito & Sullivan, 2020; Mills et al., 2022). The rapid pivot to online learning because of pandemic necessities resulted in

teachers reconfiguring teaching resources, learning environments, clinical-related content, group size, staffing requirements (Carroll & Morse, 2022; Esposito & Sullivan, 2020) and making adaptations to create safe learning environments particularly when challenging topics were being discussed (Bennett et al., 2022). Additionally, the move to a greater use of technology, to mediate Covid-19 related restrictions, supported students with diverse learning requirements who accessed screen reading software and screen magnifiers (Domyancich-Lee et al., 2022). However, synchronous Zoom sessions during the pandemic exposed the precarious access and social living situations of some students (Bennett et al., 2022). In addition, 'Zoom fatigue' resulting from the cognitive challenge interpreting non-verbal cues, blank screens, and managing sustained eye contact was recognised as a new challenge (Bennett et al., 2022).

Productive, hybrid learning environments have consideration for scheduling and the choice of when and how to incorporate synchronous or asynchronous learning. Some sources reported providing a combination of synchronous sessions to lay the foundation and create connection before moving to asynchronous learning (Jenssen et al., 2024; Kumpula & Krumwiede, 2023; Mattingly, 2021; McGovern, 2019; Rambaree et al., 2023). Alternatively, asynchronous resources for independent or group learning were followed by synchronous connection with faculty (Esposito & Sullivan, 2020; Moore & Campbell, 2021). Others moved students through a series of sessions within a synchronous space only (Bridges et al., 2020; Doran et al., 2022). Jenssen et al. (2024) scheduled group work on a collaborative assessment activity during the synchronous class time. A student reported that:

“working in groups to complete the project was great...Working in groups always gives me stress because I feel like I always have encouraged my group mates to do their part and if they do not I always have to do extra work because I do not want my grade to be affected... But doing the group work in class meant that we all did our parts" (p. 515).

Such scheduling supports group interactions and completion of course-related work. Scheduled faculty checkpoints provided an opportunity to review student progress which was particularly important in the project by Jenssen et al. (2024)

as it crossed international time zones creating increased challenges in establishing connections.

Productive hybrid learning environments emphasize psychologically and culturally safe learning practices. This included pre-briefing (Plaza del Pino et al., 2022), and a space to make mistakes without compromising patient care which,

“... is so good because we’re allowed to make mistakes, that’s what it’s here to do is to prepare us so that if we do make a mistake it’s okay and we fix it or we learn from it and that’s what it’s all about” (Reid-Searl et al., 2019, p. 276),

and a space that uses the modality of an escape room to provide an innovative, psychologically safe approach to content review, exam preparation and engagement in online class interactions (Carroll & Morse, 2022). Woodley (2020) reported that attention to creating a safe place to learn increased student engagement, noticeably in underrepresented minority nursing students, while Doran et al. (2022) found that safety in the learning environment was particularly important for indigenous students sharing their cultural knowledge and perspectives.

These experiences of safety had the potential to translate into culturally safe patient care contexts (Doran et al., 2022). However, there can be a pedagogical dissonance in learning environments that challenge efficacy for some students. The use of ‘Teaching in circle’ used by Doran and colleagues challenged a first-year student’s capacity to be reflective,

“It was ‘a garbage fire’ of an idea, seriously. Don’t do it – it’s annoying. Too emotional and not entirely educationally centred. I feel like I’m in an NA meeting – it’s not functional or practical” (p. 89).

In contrast, an indigenous student in the same study noted, “I absolutely loved participating in [the circle] – I am Aboriginal and I felt the most comfortable I have been since I’ve enrolled in any class – I want more circles please!” (p. 90). Navigating these differences can be challenging for teachers and learning designers, however, attention to creating safe practices for learning can

contribute to productive, hybrid learning environments. This finding supports the rationale for research sub-question one identifying what students and teachers characterise as productive learning activities in establishing hybrid learning environments and informs interpretation of the case study data in answering this question.

2.3.2 Pedagogy, Andragogy, Heutagogy – An Uncommon Experience

Teachers and facilitators in productive, hybrid learning environments have a clear understanding of the pedagogy (methods and practices) underpinning their teaching and student learning and adjust their teaching methods to align with their assumptions and beliefs of how students learn best. This is evidenced in Reid-Searl et al.'s (2019) simulation Mask-Ed pedagogy which deliberately minimised didactic teaching instead including learning activities that actively engaged learners in authentic and meaningful interactions with a knowledgeable educator who spontaneously coached the students while in character. Drawing on the work of Vygotsky (1978), Fox and O'Maley (2023) contend effective learning occurs when there is active learning and engagement. In their research, the teachers have a clear understanding of how they can provide technical expertise without 'taking over', how they can provide intentional support alongside their learners to jointly solve problems, creatively finding potential solutions while avoiding having to find the 'right answer'. The authors noted that providing support in this way freed students to explore and make sense of the problem. Doran et al. (2022) used 'Teaching in Circle' as their teaching method. This involved yarning circles, a communication activity familiar to Aboriginal and Torres Strait Islander Peoples, in which each person in the circle can speak, uninterrupted by others. The authors note that a clear understanding of Yarning pedagogy is essential, with attention to deep, reflective listening, if students are to reap the benefits that can be found. Initial discomfort experienced by students can, with skilful facilitation, support development of critical reflection capability.

Within adult learning contexts, such as HE programmes and courses, the incorporation of andragogical principles (Knowles et al., 2020) is essential. These take into consideration the preferences, desires and wishes of adult

learners distinct from the learning needs of children in school contexts, and includes motivations for learning, contextual relevance, prior experience and knowledge, degree of autonomy in learning decisions, and the benefit of problem-centred experiential learning. Heutagogy advances these adult learning principles to focus on learner agency and autonomy, whereby learners assume responsibility for identifying and directing their learning (Hase & Blaschke, 2021b). Hase and Blaschke (2021a) propose that heutagogy is a “pedagogy of agency” (p. 26) and provides learners the choice for self-determined and self-regulated learning.

A few of the studies in this literature review included elements of heutagogy and some specifically referred to learners having agency. Inquiry-based learning offered choice for students enabling them to discover personal responsibility for learning (Archer-Kuhn et al., 2020) while McGovern (2019) included community-based practice and digital storytelling with students taking responsibility for completing their assessment with the remainder of course components appearing to be tutor organised or led rather than incorporating heutagogical principles.

Nunev’s (2020) use of professional practice social clubs for social work students, teachers, providers, non-governmental organisation (NGO) staff and social work experts showed aspects of heutagogy. These aspects were apparent, for example, in their reporting of participants being motivated for their own professional learning and when creating their own chosen focus and prioritising interactions with club members. However, heutagogy did not appear to inform the underlying principles of the project. In contrast, Archer-Kuhn et al. (2020) consistently demonstrated heutagogy in a study where participants reported an unexpected level of agency:

“I think most of us, wherever your education was from, there’s this conventional way of teaching. And some of us sometimes might have been frustrated with the process because we feel like we need to be led and we’re not used to having that control” (BSW, 13 weeks, p. 197) and “I also liked the freedom that came with doing something on your own. I was in charge of my learning so this is how I wanted it to be and this is where I was going with it . . . So that was definitely different” (BSW, 2 weeks) (p. 196).

These responses align with the principles of heutagogical learning and essentially are about learners deciding on their own learning pathway and focus, indicating that this was a productive learning experience. Given the paucity of literature incorporating heutagogical principles in this review of HE health contexts and the predominant adult student populations, further consideration of design for learning to incorporate learner agency and heutagogy is warranted. This argument highlights the importance of research sub-question 2 in considering the influence of cogent learning design elements aligning with andragogical and heutagogical principles.

2.3.3 Effective Teaching and Facilitation

Teachers and facilitators in productive, hybrid learning environments pay attention to the sequencing and pacing of content. This might include initial student engagement with a problem, resource, clinical learning experience or simulation, followed by group sessions with discussions or debriefs (Archer-Kuhn et al., 2020; Baixinho et al., 2022; Bridges et al., 2020; Domyancich-Lee et al., 2022; Egonsdotter et al., 2020; Esposito & Sullivan, 2020; Moore & Campbell, 2021; Rambaree et al., 2023; Woodley, 2020). Other authors first provided content in workshops either on campus or online including group discussions (Bennett et al., 2022; Fox & O'Maley, 2023; Mills et al., 2022). Some studies bookended teaching or simulation sessions with pre-briefing and debriefing (Carroll & Morse, 2022; Reid-Searl et al., 2019).

Teachers and facilitators in productive, hybrid learning environments use clear communication, provide appropriate levels of support, and timely feedback to students. When courses involved international students across geographical regions, clear communication of expectations, course details and dates were essential to support attendance and engagement with synchronous and asynchronous meetings (Egonsdotter et al., 2020). Faculty support might occur through follow-up meetings with students (Kumpula & Krumwiede, 2023), or by moving around the learning environment providing tangible feedback appropriate to the moment

“when we’re... at the whiteboard and you say ‘...elaborate’ or ‘explain’... it’s like, ok, you’ve ... listened... and you haven’t told

me it's wrong... so you push me to think deeper, and I have... confidence... because [I've]... got past that first level (Renay)" (Fox & O'Maley, 2023, p. 819).

This type of support described in Fox and O'Maley (2023) enhanced these students' engagement with the course, illustrated in quotes from students such as "because they're so helpful . . . I want to put the work in for them' (Kendra). Rochelle found the teachers' 'higher level of expectation... makes me want to... strive harder... [unlike] other classes'" (p. 818). Archer-Kuhn et al. (2020) found in an inquiry-based classroom the students commented that the teachers seemed to be acting as knowledge translators rather than knowledge keepers, "in my experience with this inquiry-based learning, it wasn't clear who was providing knowledge and who was receiving knowledge, it was more so that everybody was knowledge developer (MSW 2 weeks)" (p. 200).

Productive, hybrid learning environments need teachers that are pedagogically aware, and skilled to facilitate learning, who also have opportunities to assess their own learning needs in terms of support for professional development (PD). Faculty support might include coaching on best practices in online learning environments, or ongoing IT department support via a helpdesk and topical video tutorials (Esposito & Sullivan, 2020), learning about the simulation equipment and underlying pedagogy (Reid-Searl et al., 2019), or developing a depth of pedagogical understanding that enables them to effectively support students experiencing challenges in learning (Doran et al., 2022). Carroll and Morse (2022) found facilitating escape rooms on-campus required extensive logistical planning, as well as multiple rooms and equipment availability. In response to the emergency Covid-19 pivot it was possible for one staff member to run the simulations with over 100 students at once and although this was not seen by the authors as ideal, it was considered necessary given the constraints at that time. This finding speaks to the pertinence of the research questions by elucidating key features to observe in case study data indicating characteristics of effective teaching and facilitation.

2.3.4 The Contribution of Conviviality

Productive, hybrid learning environments incorporate conviviality, moments of experiencing life and learning together (Networked Learning Editorial Collective (NLEC), 2020). Conviviality included developing a sense of camaraderie through shared learning experiences of challenge and humour (Carroll & Morse, 2022; Reid-Searl et al., 2019), through moments of empathy when students were sharing personal experiences or considering the lived experiences of others (Bennett et al., 2022; Esposito & Sullivan, 2020; Rambaree et al., 2023), and because of experiencing peer support while collaborating on learning activities (Archer-Kuhn et al., 2020; Esposito & Sullivan, 2020; Jenssen et al., 2024). High levels of enjoyment in the escape room activities led to “word-of-mouth advertising” requiring increased sessions to meet capacity (Moore & Campbell, 2021).

During the mandated Covid-19 quarantine times of physical isolation, synchronous video-conferencing sessions provided a tangible sense of connection and support with a community of learning (Esposito & Sullivan, 2020). Connections were enhanced by the teacher (Woodley, 2020) committing to learning all student names ($N = 102$) and trust was built through group engagement in activities (Kumpula & Krumwiede, 2023). Subliminal learning and friendships developed as peers offered support (Reid-Searl et al., 2019). Teachers and learning designers can design learning opportunities, however Fox and O’Maley (2023) note that it is often due to a confluence of factors occurring spontaneously that these moments bring enjoyment. Experiencing moments of conviviality, humour, empathy, friendship and connection have the potential to help students and staff relax and find enjoyment in challenging learning situations and thereby facilitate critical thinking and enhance learning (Moore & Campbell, 2021) in productive, hybrid learning environments. When learners and teachers are online together, they are physically present, embodied in that shared online space and there is opportunity for meaningful, convivial interactions. The finding indicating the importance of conviviality signposts a potential characteristic of productive, hybrid learning environments in response to the primary research question.

2.3.5 Rich, Realistic Teaching and Learning

Designing for learning in healthcare related courses that lead to professional qualifications, necessitates embedding rich and realistic learning resources, with learning opportunities, and tasks that reflect current healthcare contexts to prepare learners for professional practice. For the sources in this review, providing realistic learning events included consideration of the types of resources used, how simulation sessions were organised, links to evidence-based practice, regard for patient experiences and outcomes, reflective practice, and effective inter- and intra-professional practice.

Productive, hybrid learning environments used realistic and complex case studies; clinical documentation that reflected those found in current contexts; and typically used healthcare equipment (Egonsdotter et al., 2020; Kumpula & Krumwiede, 2023; Moore & Campbell, 2021; Reid-Searl et al., 2019).

Additionally, the inclusion of time pressure and gamification added clinical realism (Carroll & Morse, 2022; Moore & Campbell, 2021). In a study by Baixinho et al (2022), a student acknowledged the alignment with practice settings in the rigor taught for using databases to locate literature for evidence-based practice decisions, commenting that they “stopped accepting everything as fact or correct, when they tell me “it’s done this way” I always ask why and the basis behind It” (FG1, P.1) (p. 6).

In some instances, however, mirroring the clinical context is not possible. Carroll and Morse (2022) report escape rooms incorporating a mock pneumatic tube delivery station to deliver a test result was possible when students and teachers were on-campus but was not possible in virtual simulation. The added realism of incorporating resources and equipment that students will eventually see in clinical settings prepares them, not only in a haptical sense as they touch and use equipment, but also for the reality of professional practice dynamics.

Productive, hybrid learning environments use simulation to provide layers of reality. The International Nursing Association for Clinical Simulation and Learning (INACSL) has identified criteria and required aspects for best-practice

simulation (INACSL Standards Committee, 2021). Some sources incorporated simulations (Esposito & Sullivan, 2020; Plaza del Pino et al., 2022; Rambaree et al., 2023; Reid-Searl et al., 2019) and these often included pre-briefing – students are provided with information on the topic and simulation conventions; briefing – information about the clinical case or context; simulation – often a patient encounter, typically as real as possible; debriefing – review the case, the decisions made, actions taken and a summary of the experience. The final debriefing session brings together the expert educator’s knowledge and the varying participant perspectives to “amplify the overall analysis of the simulation” (Esposito & Sullivan, 2020, p. 524).

The level of realism, termed ‘fidelity’, was emphasised by Plaza del Pino et al. (2022) in relation to the actor playing the role of a migrant patient, who received training to prepare her to effectively present the person in the case. Students in Mask-Ed simulation (Reid-Searl et al., 2019) experienced a level of fidelity so close to reality that they reported smelling faeces when there was no scent associated with the simulation props. When design for learning incorporates principles for effective simulation the experience can supersede reality,

“... some students revealed that Muriel Moore was a ‘real’ person to them in the sense that her mannerisms, voice, and story suspended them in disbelief. While they knew the hidden educator was behind the mask, during the simulation that reality had disappeared” (p. 277).

Aspects of design for learning that direct student attention to patient experiences and outcomes adds to the realism. The importance of having realistic patient perspectives was evident in the students’ reactions to the graphic novels used in research by Domyancich-Lee et al. (2022). Profound parental grief compounded by socioeconomic and sociocultural factors was graphically portrayed in the resource. The authors suggest that the depth of understanding may not have been evident in a purely text-based case study. Students in a study by Baixinho et al. (2022) were embedded in evidence-based practice and worked alongside healthcare professionals who were focused on “the ultimate goal of enhancing the delivery of health care for improved patient outcomes” (p. 9). In research by Reid-Searl et al. (2019) simulation activities

with year 1 nursing students primarily focused on the embarrassment of providing intimate care for a person, however

“...as the simulation progressed, participants began to feel comfortable and confident in providing intimate care to Mrs Moore. Emphasis had moved away from the tasks of toileting and showering and moved to the person who was central to the nursing care. Furthermore, after providing intimate care for Mrs Moore, the challenges that students initially discussed in term of dealing with the abject tasks of cleaning genitals was diminished” (p. 278).

What the above scenarios illustrate is that attention to incorporating realism in the design of these learning opportunities can have profound influence on student learning experiences, knowledge acquisition and on professional practice.

Productive, hybrid learning environments strive to leverage student realistic learning experiences to support deep learning through reflection. The individual's thinking, alongside group conversations during and after these experiences enabled multiple perspectives to be considered. It was essential to acknowledge potential anxiety (Bennett et al., 2022; Reid-Searl et al., 2019) or manage discomfort particularly initially when students might have felt their performance was being assessed as in a summative assessment (Egonsdotter et al., 2020). These authors found that over time students could reflect and critique their own practice. Moore and Campbell (2021) used prompts to focus learners on specific aspects related to effective patient care and to direct attention to the dynamics of leadership and communication within a learning situation rather than on performative assessment.

Productive, hybrid learning environments have a tangible and obvious focus on preparing students for effective professional practice. Realistic professional behaviour is evident in clinical context social dynamics and learners' growing awareness of the expectations of healthcare professionals (Archer-Kuhn et al., 2020; Baixinho et al., 2022; Egonsdotter et al., 2020; McGovern, 2019; Nunev, 2020; Plaza del Pino et al., 2022), improving and demonstrating effective communication (Baixinho et al., 2022; Bridges et al., 2020; Jenssen et al., 2024; Mattingly, 2021; Moore & Campbell, 2021; Reid-Searl et al., 2019), conducting

difficult conversations (Reid-Searl et al., 2019), working in complex situations (Esposito & Sullivan, 2020; Reid-Searl et al., 2019), and in enhancing interprofessional practice (Archer-Kuhn et al., 2020; Baixinho et al., 2022; Bridges et al., 2020; Moore & Campbell, 2021; Nunev, 2020). Each of the experiences and interactions within these learning contexts serve the purpose of exposing learners to potential situations, challenges, common or uncommon patient care scenarios and the reality of professional practice to inform their clinical decision-making and contribute to optimal patient care outcomes. This finding raises a relevant aspect to sub-question two by alerting to the benefit of rich realism in learning design elements to create productive, hybrid learning environments.

2.3.6 “I Feel Challenged and Equipped”

Mezirow (2000) contends that for adult learning to be transformational, it needs to be preceded by a catalyst that challenges a person’s point of view and requires them to examine core beliefs, values, knowledge or assumptions. Mezirow notes that adjustments such as this requires self-reflection, a willingness to explore new perspectives, the ability to accommodate uncertainty and accept the potential for a fundamental shift in perception and understanding.

Productive, hybrid learning environments incorporate intentional challenge to broaden awareness, support critical thinking and prepare students for graduate practice. Activities were designed to create a productive challenge for students to collaboratively work through (Bridges et al., 2020; Carroll & Morse, 2022) and to present realistic clinical challenges (Moore & Campbell, 2021; Reid-Searl et al., 2019). The inclusion of prompts to support reflection enhanced student ability to apply their learning (Moore & Campbell, 2021). Reid-Searl et al. (2019) demonstrated interactions with a knowledgeable masked educator established a platform to create controlled disorientation and cognitive dissonance thus amplifying the discussions, interactions and learning. Similarly, Mattingly (2021) found that student interactions with patients in a community health project evoked disequilibrium as their growing realisation of health inequities and the effect of historical trauma on patient health and well-being became evident.

Such challenges and subsequent reflections can be transformative in developing depth of knowledge and changing perspectives.

Intentional challenge was reported by Doran et al. (2022) when usual classroom 'props' such as desks, computers and devices were removed from the learning environment to be replaced with a circle of chairs, "... the simple act of removing the desks was uncomfortable, as they possibly became aware of their own western cultural preferences where desks are the "norm" (p. 90). Importantly, the anxiety felt by these students in this changed classroom environment can mirror the experience of indigenous peoples when forced to conform to Western learning practices. The authors noted that with a greater level of experience and confidence with the Yarning pedagogy, they might be more circumspect next time in rearranging the room back to conventional layout to accommodate student discomfort. Holding to the Yarning principles through this challenge could have the potential for learner transformational change.

Students in the Mask-Ed simulation toileted and showered 'Muriel Moore' in a simulated lab environment (Reid-Searl et al., 2019). Despite the cognitive dissonance of knowing that Muriel was their hidden educator, combined with the challenge of providing personal cares to a 'naked' person and feeling out of their depth, the students were able to build on their prior knowledge to co-construct a plan of care. Using TAG team simulation strategies enabled students to opt in and out of the simulation roles and benefit from the group's collaborative knowledge and capability during the debriefing times. Learning opportunities intentionally designed to encourage challenges, while potentially an uncomfortable experience, can in fact lead to reflection, reconsideration of perspectives and transformative growth if managed safely by a skilled educator (Doran et al., 2022; Mills et al., 2022).

Productive, hybrid learning environments embrace challenge to catalyse learner transformation. Such a catalyst might be understanding and revealing professional bias (Egonsdotter et al., 2020), acknowledging the traumatic and generational consequences of oppressive histories (Mattingly, 2021), or examining existing power imbalances in healthcare (Archer-Kuhn et al., 2020; Mattingly, 2021; Mills et al., 2022). Teachers in productive, hybrid learning

environments guide students to explore new perspectives. Guidance includes modelling a method to identify, understanding and graphically representing key concepts within a piece of literature being studied (Fox & O'Maley, 2023), or increasing awareness through a patient's perspective (Archer-Kuhn et al., 2020; Mattingly, 2021; Plaza del Pino et al., 2022). Such lived experience takes a learner beyond the theory to reality:

“Because you're talking to people that are living it and you're seeing in their expressions what they describe . . . Instead of it being a theoretical conversation, you're seeing what that looks like on a day-to-day for people.” (Archer-Kuhn et al., 2020, p. 199).

Productive, hybrid learning environments leverage the power of productive struggle for transformative learning (Mezirow, 2000). Fox and O'Maley (2023) consciously held back from providing the expert answer and instead used questions to elicit student understanding and perspectives, guiding them to identify and diagrammatically present connections, when comparing with others “weaving constellations within constellations” (p. 816). Reid-Searl et al. (2019) used humour to redirect student anxiety during a challenging patient care situation:

“the task was no longer focused on separate body parts and smells but Muriel as the person. It was these elements that allowed students to see beyond the abject task, and feel comfortable, compassionate and immersed in the simulation” (p.277).

Many student voices reflected on how their understanding had been transformed and their learning enhanced. Despite initial challenges with the Teaching in Circle format, a student reported that they were “taken out of my comfort zone and it has been a positive experience I began to get used to [TiC] and without even knowing it spoke quite comfortably and without nerves” (Doran et al., 2022, p. 87). Students in inquiry-based learning research undertaken by Archer-Kuhn et al. (2020) pursued chosen topics and actively developed their understanding through questioning and co-construction of knowledge with peers, commenting that they were “producing knowledge together; deepening the knowledge together” (MSW, 1 week) (p. 201). While

Reid-Searl et al. (2019) in MaskEd simulation used errors as a key part of transformational learning in preparation for clinical practice, a student explained “they encourage us to make mistakes so that when we do get out there we’ve already learned from those mistakes before we get out there” (FG 1a, Pcpnt 2) (p. 276).

A key feature of transformational learning is critical reflexivity (Mezirow, 2000). Productive, hybrid learning environments enable learners to recognise professional responsibility to examine their practice to provide culturally safe care. In this review of the literature it was apparent that cultural competence and cultural safety were sometimes used interchangeably, however, they have distinct differences. While the former incorporates cultural awareness, cultural sensitivity, cultural humility, awareness of diversity equity and inclusion, Ramsden (1993) contends that cultural safety begins on the premise that it is the person providing care who must examine their personal reality, beliefs and values and the influence of these on the care they provide, while it is the person receiving care that determines what is culturally safe for them. A patient’s perspective, therefore, cannot be learned ahead of time in a cultural competency course. It is dynamic and is predicated on the healthcare professional’s willingness to continually reflect on the influence of their own culture and potential biases within clinical care interactions (Curtis et al., 2019). However, given the interchangeable references to these terms in the reviewed literature, I have decided to discuss them together.

Productive, hybrid learning environments encourage healthcare learners to focus their attention on culturally safe practice. The reviewed literature identified culturally safe or culturally competent care as including the use of appropriate strategies to assess, document and provide care, recognition of power dynamics operating within a therapeutic relationship (Mattingly, 2021), recognition of the healthcare professional’s role in transforming negative stereotypes and prejudice (Nunev, 2020) and becoming empathetic to a patient’s lived experience (Plaza del Pino et al., 2022). Empathy extended to noticing nuanced changes in the therapeutic relationship when the student reads questions from a sheet compared with looking at a person and sitting

down while asking the questions. The latter initiatives resulting in the person being more open to providing their health information (Mattingly, 2021). A deepening awareness of social work values and capabilities resulting from field internships and mentoring of supervisors was evident in research by McGovern's (2019) with a student noting that "learning about each of our participants in the group work enlightened me of how essential cultural competence is in the social work profession in general" (p. 514).

Cultural safety extends beyond healthcare contexts to include HE learning environments. Experiential learning can challenge core beliefs, triggering discomfort but can prompt conversations that deepen understanding and result in critical reflection (Doran et al., 2022). Additionally, experiencing cultural safety in a learning environment was seen to have parallels with patient care contexts (Doran et al., 2022; Woodley, 2020).

Students in the SimChild project (Egonsdotter et al., 2020) developed insight into the effect of unreflective thinking on patient assessment and clinical decision-making and the potential for culturally unsafe care. Doran et al. (2022) found the "Teaching in Circle" project highlighted feeling safe in a teaching environment was essential "but this is only noticed when someone does not feel safe" (p. 90). Experiencing a lack of safety can deeply affect a learning situation and can result in a visceral response from students.

Mezirow (2000) asserts that a productive struggle can be a catalyst for a change in perspective and is an indication of transformational learning. Mezirow argues it is essential for teachers to design learning opportunities that provide safety while also including challenge. Productive, hybrid learning environments will identify, plan for, and incorporate challenge as a motivator for personal and professional growth (Woolley & Fishbach, 2022). This finding alluding to the importance of including curated, intentional challenges as contributors to productivity in hybrid learning environments, heightens awareness for identifying similar challenges in case study data in response to the primary research question.

2.4 Discussion

In this systematic literature review I identified design features that characterise productive, hybrid learning environments. To review the wide range of research conducted in HE health environments this study adopted a coding based on the ACAD framework to analyse design for learning in related health education research to identify components contributing to productive, hybrid learning environments. The studies in this review indicated that teachers and learning designers incorporate a range of elements to create courses and opportunities for productive learning. The results indicated a clear understanding of pedagogy, andragogy and heutagogy is essential and these are evident when teachers consider how to integrate the learners, the context, the topics, and design for learning strategies. Incorporating andragogical principles when designing for learning requires a focus on strategies that are suitable for adult learners. What works best for learners and teachers, how to present content, engage learners in their learning journey, provide support prompts to guide students, and where learner agency can be integrated into the learning design must all be considered. Hase and Blaschke (2021a) propose that embracing learner agency in design for learning moves learners from passive consumers to active creators and innovators. These are hallmarks of productive, hybrid learning environments.

Additionally, there is a requirement for teachers to be curators of context-relevant resources and learning tasks. There are a wide range of resources available to teachers and learning designers. Therefore, it is imperative that any elements included are a consequence of intentional design to meet a purpose and pedagogy is understood by those teaching.

A key feature of the studies reviewed indicated a need to consider sequencing of material and events, provide clear communication, and offer appropriate and timely support to students. In terms of the epistemic content within courses teachers needed to act as knowledge translators to support co-creative knowledge development. This strongly aligns with the central aspect of the ACAD framework where what is designed relates to what emerges as students co-create knowledge.

Many of the studies referred to the need for teachers to be familiar with the underlying pedagogy of the learning event or course. A mechanism for a teacher to assess their own knowledge and capabilities, strengths and gaps, and subsequently have access to targeted professional development (PD) was identified. As was the need for faculty to adopt a dextrous approach to navigating and overcoming challenges including supporting the develop of necessary skills. It is recommended that ongoing PD embrace heutagogical principles for staff, enabling them to be well prepared to teach and support students in hybrid learning environments (Green, 2022). Productive outcomes are dependent on staff having capability to effectively implement course design.

The literature reports change in the effectiveness of design for learning due to the rapid pivot to fully online delivery, as a result the Covid-19 pandemic. For Carroll and Morse (2022) moving online and reducing multiple staff to one teacher was necessary but 'not ideal'. It would be challenging to provide the level of support identified as a marker of productive, hybrid learning environments and maintain active engagement and interactions with one teacher only. When using multiple breakout rooms, the literature suggests that staffing needs to be sufficient to circulate through rooms and answer questions, keep learners on track and provide the 'appropriate level of support' identified.

Teamwork is an essential part of interdisciplinary clinical practice. Inclusion of group activities and projects can prepare students for professional practice although group projects are often challenging. Jenssen et al. (2024) found that using synchronous and scheduled times to bring groups together supported effective collaboration. This would be a worthwhile strategy to consider in design for learning to create a productive, hybrid learning environment.

Psychologically safe learning environments with well-prepared students and faculty can optimise learning with the potential to decrease cognitive load of unfamiliar learning environments or resources. However, faculty need to be mindful of the need for orchestrated challenge to act as a catalyst for transformational learning to occur.

Recognising that one teaching pedagogy may not suit all learners requires the long-term benefits of the specific rational adopted to be understood by learners. Answering “How will this benefit my patient care, my practice, my professional context?” may help move the focus from “I don’t like this”.

Given the imperative for HE health programmes to equip graduates to provide effective, professional healthcare for people, design for learning must include realistic learning experiences, resources and contexts. There was strong evidence for the benefit of rich, realistic learning to translate to professional practice knowledge and skill development. This included opportunities to practice and enhance capacity to work both intra- and inter-professionally. Effective teamwork, communication and collaboration is a hallmark of effective patient outcomes and is an essential feature in productive, hybrid learning environments.

The results of these findings will be particularly useful in the design of HE health context courses and programmes and in consideration of the capabilities and competencies required for staffing in hybrid learning environment courses.

2.5 Limitations and Confidence

This systematic literature review has several limitations. The exclusion criteria, such as sources not written in English, or outside of the time limits, by intention supported a focused view of the literature but had the potential to exclude some sources. There is potential for future research to include a wider range of sources. This review took a Framework Synthesis approach using coding based on the ACAD framework. As such, there was a clear focus on literature that included specific reference to elements of knowledge co-creation, self-realisation, identity formation and knowledge building (Carvalho & Goodyear, 2014). While this approach might exclude some sources, a targeted focus combined with a moderate level of confidence in the review findings ensured a reasonable representation of the literature was reviewed to extend knowledge on productive, hybrid learning environments. When assessing the overall level of confidence in findings from studies included in the systematic review the starting premise was high confidence in the findings of each study which were a

reasonable representation of the phenomenon of interest. These levels were downgraded when concerns were identified in any of the four CERQual components (methodological limitations, coherence, adequacy and relevance). The iSoQ condensed summary of qualitative findings (Table 2.2) identifies moderate confidence for each of the review findings which relates to the methodological limitations of some of the included literature within each finding that used a narrative design or was a report on an educational innovation. No/Very minor concerns were reported for all other CERQual components.

2.6 Summary of Chapter

While no sources in this literature review specifically used the phrase ‘productive, hybrid learning environments’, this review has identified key characteristics that are suggestive of elements that contribute to productive, hybrid learning environments. To the best of my knowledge this is the first systematic literature review to use the ACAD framework as part of a Framework Synthesis to focus on nursing and social work undergraduate health education contexts.

There is reasonable confidence in the review findings to suggest that design for learning in productive, hybrid learning environments is characterised by six key aspects: preparation of the learning environment, the people involved and the resources to be used; teachers have a clear understanding of the underlying principles of the teaching methodology; consideration is given to how information, communication and support is provided; the importance of empathy, connection, humour and camaraderie in supporting learning is recognised; students are prepared for the reality of professional inter- and intra-professional practice; and the imperative of designing learning with intention so that learning can be transformational.

The findings support assessment of professional development opportunities for faculty, including to become fully conversant with pedagogical foundations and requirements within design for learning, and the importance of preparation to support of students to contribute to productive, hybrid learning environments. A systematic literature review approach was chosen because it provided a robust,

transparent, repeatable process for assessing literature from diverse sources to provide a comprehensive analysis of productive, hybrid learning environments in higher education health contexts.

Chapter 3. Theoretical Frameworks

3.1 Introduction

Research paradigms identify core underlying beliefs informing the research process and findings which then influence how reality is investigated, understood and interpreted from a particular standpoint. These paradigms drive how the research is developed and point to essential actions (Bloomberg & Volpe, 2019). Such research decisions are pivotal in guiding the selection of appropriate lenses to understand and make sense of what is under examination.

This research holds the philosophical paradigm of social constructivism which Creswell and Creswell (2023) identify is primarily inductive with meaning generated from the data. As such, the focus of this thesis is on understanding relations between people and the ways they interact with, and are influenced by, various design elements within learning environments. A social constructivist epistemological paradigm is foundational to this research encompassing a focus on both the social nature of human experiences and the importance of individual perspectives within these encounters. From this standpoint, meaning is inductively generated (Creswell & Poth, 2018), as people interact with others and the environment, while actively engaging in understanding and interpreting their experiences and developing representations of reality (Ben-Ari & Enosh, 2020). Such an approach views reality as subjective; the researcher may have an insider perspective to inductively gain an understanding of a phenomenon. The benefit of qualitative research is that it affords the opportunity to gain a comprehensive perspective that incorporates complex and varied data, interactions and experiences (Creswell & Creswell, 2023).

Key to this research is observing, listening and understanding the perceptions of those involved in hybrid learning contexts in HE health courses.

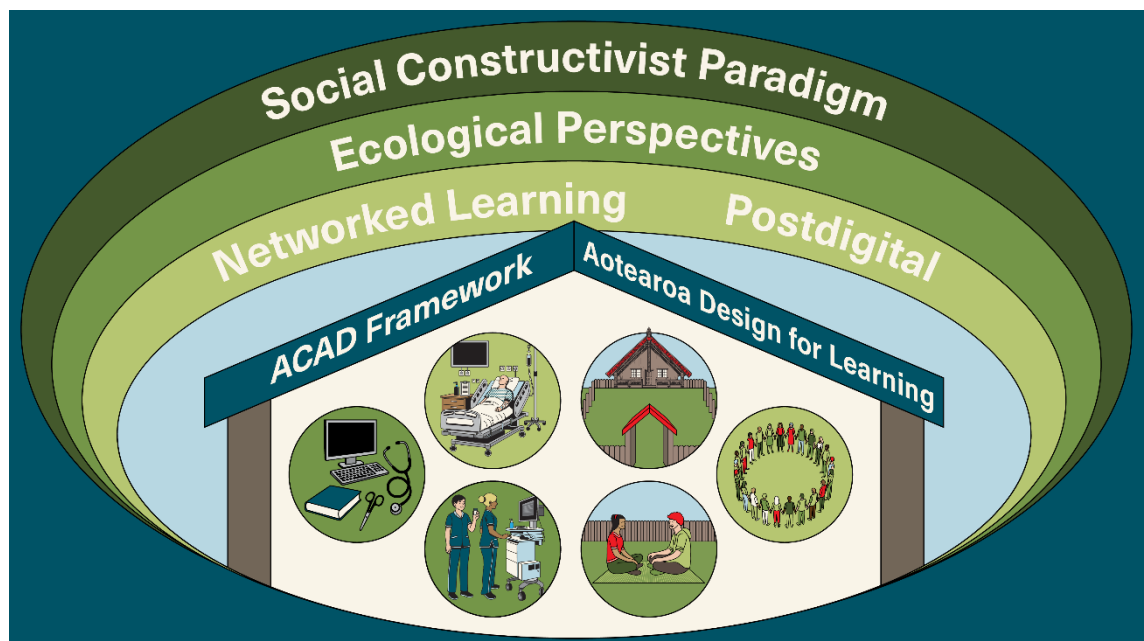
Contemporary perspectives in education have been embracing ecological theories that foreground a complex web of elements in learning, such as digital and material tools, tasks, and people, which together contribute to postdigital,

productive learning environments (Carvalho et al., 2017; Damşa et al., 2019; Fawns & O'Shea, 2019; Jandrić et al., 2018; Ryberg & Sinclair, 2016). In brief, according to Jackson (2019) an ecological approach in learning incorporates a multi-modal view in which everything occurring is seen as part of a whole system. This includes human and non-human aspects, how they interact and influence the learning situation, contribute to the learning that emerges and how they encompass trans-contextual settings (Damşa et al., 2019). This research draws on ecological perspectives in education to theorize the complex relations between people, tasks and tools in contemporary learning environments connected to undergraduate health courses at a university in Aotearoa New Zealand.

This chapter begins with an overview of ecological approaches in education and then presents core principles and assumptions related to networked learning and the construct of postdigital learning spaces in higher education. The frameworks included in this thesis are presented in a nested configuration (see Figure 3.1).

Figure 3.1

Overview of Thesis Theoretical Frameworks



Critical issues in postdigital education are presented with acknowledgement of the required emergency responses to the Covid-19 pandemic. The knowledge

and skills required for undergraduate teaching and learning in contemporary healthcare contexts are considered, before the chapter situates the research within an Aotearoa New Zealand context with a discussion on the use of Te Whare Tapa Whā (Durie, 1985) as a supporting ecological perspective for exploring productive, hybrid learning environments in higher education. Additionally, the chapter introduces key learning design frameworks and explains the development of a novel framework that integrates the use of the Activity-Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014) in the cultural context of Aotearoa New Zealand, guiding the thesis' research analysis to identify convergence within postdigital, ecological and hybrid learning environments.

3.2 Ecological Perspectives

Historically, the Ecological Model (Bronfenbrenner, 1997) first postulated in the 1970s and later revised—the Bioecological Model—have been influential both in considering an individual's development and understanding learning as occurring “through time and across space” (O'Toole et al., 2019, p. 22). In the field of education, this later model moved beyond nested systems to incorporate contextual and environmental influences on an individual's development as a result of their interactions with dynamic networks of learning, social and relational experiences. Both learners and the environment are subject to continual change influencing social, affective and cognitive development (Damşa et al., 2019).

While all living organisms inhabit ecosystems to sustain life, Jackson (2019) highlights that humans develop their ecologies to enhance and add meaning to their daily existence. Within a higher education context, Ellis and Goodyear (2019) take the perspective that all interactions, relationships, connections, spaces, resources and virtual environments are a part of daily existence and contribute to the ecology of the university ecosystem. Indeed, on an individual level, this includes a person's internal and external motivations, prior experiences, inherent interests, and curiosity. However, there are also other elements that influence their interactions with and experiences of the university ecosystem (Jackson, n.d).

Ecological perspectives acknowledge the complexity of learning situations encompassing diverse, entangled, non-linear and emergent aspects (Blaschke et al., 2021; Damşa & Jornet, 2016; Fawns & O'Shea, 2019). For students in higher education, the ubiquitous nature of information sources, and the need to deal with multiple tools, requires a focus on students being able to develop the skills and mindset to access, use and transform resources that are integral to their learning and professional practice (Damşa & Jornet, 2016). In higher education healthcare contexts, in particular, students will interact with multiple elements to learn specific skills and content knowledge. This might involve understanding anatomy, pathophysiology, and pharmacology, or investigating archival historical artefacts. Additionally, it can include the use of specific health equipment, as well as developing practical techniques for patient care; how to interact with, interview and examine patients; and essential skills related to communication, interdisciplinary practice and critical thinking. As such, teaching and learning in this context is not solely focused on understanding science and developing clinical skills but includes collaboration and co-construction towards undetermined endpoints that allow for transformative emergent outcomes.

The phenomenon of emergence is a fundamental aspect within ecosystems. It results from interactions between individuals establishing their non-linear pathways within social constructs, rather than deliberate planning or design (Blaschke et al., 2021; Mars et al., 2012). Learning ecologies evolve over time and can occur in formal, informal and non-formal contexts, with symbiotic interactions between living and non-living aspects, such as tools, artefacts, ideas, texts, spaces and places (Blaschke et al., 2021; Fawns & Ross, 2021). Higher education environments influence students, teachers and researchers as they develop their knowledge and skills, but do not determine their activities (Jackson, 2019).

In addition, there has been a growing awareness about the influence of sociomaterial and sociocultural elements, including human and non-human aspects and the role of these multiple elements in outcomes of learning situations (Damşa & Jornet, 2016; Fawns & O'Shea, 2019). Sociomaterial and sociocultural perspectives acknowledge that what emerges in a learning

situation is contextualised and is a result of the assemblage of these human and non-human aspects and interactions present within the learning space (Damşa & Jornet, 2016; Fawns & O'Shea, 2019). This points to the need for consideration of learning ecologies to develop an understanding of the interactions occurring between multiple elements and their influence on each other. Digital technology is part of this mix of elements, and its influence in teaching and learning has been theorized within a field of research and practice called networked learning.

3.3 Networked Learning

Networked learning (NL) emerged in the late 1980s in response to the growing use of technology within higher education learning environments within and beyond the United Kingdom (Beaty et al., 2002). It encompasses the use of technology to promote sociomaterial connections between people and materials in situations that promote learning (Carvalho & Goodyear, 2020; Hodgson & McConnell, 2019). Drawing on ideas from Freire about critical theory (1972), NL emphasises the importance of an active and emancipatory social role, advocating the agency of learners and teachers (Hodgson & McConnell, 2019).

From a philosophical and pedagogical stance, NL activity involves people in the development of a shared sense of challenge. This is realized through collaborative activity, as learners and teachers engage in the pursuit of collective inquiry and through knowledge creation. These NL situations also involve a mix of social, digital and material elements (Carvalho & Goodyear, 2020; Networked Learning Editorial Collective (NLEC), 2020). Hodgson and McConnell (2019) outlined eight foundational principles of NL, which include:

1. The focus is on learning which has perceived value to the learners.
2. Responsibility for the learning process should be shared (between all actors in the network).
3. Time has to be allowed to build relationships.
4. Learning is situated and context dependent.
5. Learning is supported by collaborative or group settings.

6. Dialogue and social interaction support the co-construction of knowledge, identity and learning.
7. Critical reflexivity is an important part of the learning process and knowing.
8. The role of the facilitator/ animator is important in networked learning. (pp. 45-46).

While NL grew out of a concern for mechanistic, technology-controlled education, ironically, two decades later there appears to be a shift in learning software and neoliberal educational management that has the potential to revert back to behaviouristic psychology under the guise of being student centred. Knox et al. (2020) challenge the apparent increasing political economy of education with data mining and data analytics surveillance of learner engagement in the 'learnification' of current education, with behaviouristic practices that lead learners towards predetermined outcomes. Additionally, Jandrić and Ford (2022) caution the pervasive reach of data analytics and big data to drive algorithms and inform artificial intelligence in redefining knowledge.

As such, there has been a call from the NL community to revisit the core principles developed two decades ago, inviting redefinition relevant to our current socio-technological experiences (Gourlay et al., 2021). The resulting broad, community, critical response from 40 contributors considers philosophical foundations, social justice and emancipation, diversity, types of NL community collaborations, and ways of navigating networks. These authors highlight the important focus on social justice and equity in dynamic and emerging postdigital learning environments.

Indeed, developing skills and knowledge or acquiring a body of knowledge for a specific context is no longer sufficient in complex, interdisciplinary, 21st century contexts. Mastery encompasses the ability to account for contextual differences in people, places, and resources (Damşa & Jornet, 2016). Learning in higher education must support learners to consider, adapt and transform knowledge and practices for a variety of potential contexts and circumstances. As such it is essential to support learners to develop an inquiring mindset to address issues,

and to enhance their potential to become agents of change in transforming what is, and what might be.

Students in higher education contexts are looking for greater connectivity and social support, and post pandemic they may no longer share their parents' or teachers' belief that higher education offers opportunities and financial benefits (Browne & Foss, 2023). The authors recommend collaboration between students, staff and HE institutions to investigate and look for solutions to the issues that are facing humanity, real-world, relevant problem solving to address societal concerns. Kahu (2021) tangibly creates such connectivity and support by presenting a range of online resources and activities which create a sense of whanaungatanga, a shared sense of belonging and relationship. Using a curated suite of resources, Kahu can connect with up to 300 students in a fully online, first year course. This capacity for learner agency and self-determination is a hallmark of heutagogy (Hase & Kenyon, 2001) and is an example of NL recognising the learner's capacity for metacognition, vis., critical reflection on their thinking, and supports non-linear learning pathways identified and determined by the learner (Blaschke et al., 2021). The authors suggest that student learning is empowered in these environments.

These theoretical perspectives enable educational researchers to consider the complexities of learning: formal, informal and serendipitous moments; student and teacher characteristics; and occurrence across time, place and with a variety of tools which, in a postdigital context, can be enabled by convivial technologies (Networked Learning Editorial Collective (NLEC), 2020).

Conviviality in this context refers to tools enabling networks of people to 'make their lives together' (Illich, 1973). This doctoral research takes a comprehensive view of these elements to examine three higher education, healthcare cases to develop a nuanced understanding of their learning contexts. The research draws on NL in an ontological and epistemological sense to analyse what is occurring in the higher education health contexts included in this study. In this thesis, the term hybrid learning environment (Gil et al., 2022) is used to capture the complex, entwined nature and experiences of knowledge, social dynamics, technology and people involved in teaching and learning in current, postdigital,

higher education contexts. The next section further elaborates what it means to live and learn in a postdigital world.

3.4 Learning in a Postdigital World

A postdigital perspective provides a rich and multifaceted lens to view current learning environments within an ecological system. According to Jandrić et al. (2018), postdigital learning environments encompass diverse components of technology, information sources, human and non-human factors that are “messy; unpredictable” (p. 5) and as with any ecosystem, dynamic and evolving. The postdigital world has challenged previous dichotomous notions of online or offline, digital or analogue, in person or virtual, which do not account for the entwined and enmeshed characteristics of current hybrid learning environments where there is a mix of material and digital tools and spaces, with multiple learning aspects and influences (Green, 2022; Green et al., 2020; Jandrić & Ford, 2022; Jandrić et al., 2018; Sangrà et al., 2019). A postdigital stance therefore disrupts long-held beliefs on educational theory and practice (Jandrić & Ford, 2022).

Traditional views of education have tended to portray learning as situated in a classroom, tables in rows, teacher-expert at the front of the room and students listening and notating information, with recall in an exam being the measure of successful learning. However, these stereotyped views of learning have been challenged, particularly over the past two decades as technology and digital resources have proliferated (Lamb et al., 2022). A postdigital stance provides more nuanced understandings of contemporary university campuses, which now include flexible spaces, with learning in multi-functional, configurable spaces and groupings, with students accessing information from multiple digital devices and sources and documenting their developing understanding and mastery in multiple ways that include presentations, essays, reports, e-portfolios, and videos. Students use and interact with multiple tools, including pen and paper, smartphones, laptops, and other specialised equipment. Pedagogies, along with teaching and learning practices, have evolved to capitalise on the opportunities afforded by these changes. Current views acknowledge contextual fluidity of learning occurring in multiple contexts and

spaces (e.g., university café, learning while commuting to school, social media posts and so on) within a learning entanglement that involves a broad variety of resources, technology, and social groupings where engagement with epistemic knowledge occurs in multi-modal ways (Damşa et al., 2019; Lamb et al., 2022; Sangrà et al., 2019).

Bayne and colleagues (2020) commented that in contrast to a dualistic view of learning environments being either online (virtual), or on campus (in-person), a more nuanced perspective to examine and research learning is needed. Key to this is the consideration and challenge of existing practices and structures in relation to how these practices incorporate sociomaterial aspects such as the nature of, and opportunities for, connections, collaborations, co-creation of knowledge and critical reflexivity. For many years, educators in the higher education sector seemed to express a perception that to be interacting with others using a screen-based meeting platform, such as Zoom, means those involved are not meeting 'in person'. Gourlay (2021) challenges the idea that these interactions are virtual, with people's presence somehow digitally divorced from reality. Instead, the author argues that "performativity" in onscreen interactions (p. 58) in which those involved are physically interacting with devices, technology, learning spaces and each other, constitutes embodied engagement which can be interpreted and understood within sociomaterial and postdigital frames of reference.

In the Manifesto for online teaching, Bayne et al. (2020) note a tendency to view the use of technology in learning contexts as either instrumental or essentialist. The former relates to technology being a useful tool to be employed and able to gather analytical learner data, while the latter takes the perspective that it plays an essential role in social change. However, these views fail to consider the entangled, sociomaterial nature of our current use of technology in learning environments and its pervasive influence on interactions between learners, teachers, on knowledge development within learning contexts, and on what emerges in each learning moment. The authors argue that instead of valid learning primarily occurring on-campus, co-located, and in-person, learning activity is also evident in the messy, unpredictable sociomaterial entanglements

that can occur in well-designed online learning environments, occurring wherever the people involved are located. Bayne et al. (2020) propose that online learning can accommodate diverse needs by providing options for learners and can support learner creativity in a socially engaging and collaborative manner. This raises the question, “How might on-campus, co-located, in-person learning also provide this breadth of flexibility for learning?” Proximity or distance becomes less relevant when valid, embodied interactions and learning conversations occur between students and teachers wherever they are located.

In sum, the notion of postdigital accounts for the influence of diverse technological, informational, material, and biological elements on people’s lives (Jandrić et al., 2018), and importantly, such influence is often also problematized in relation to wider socio-economic, political, and environmental issues in society.

3.5. Critical Issues in Postdigital Education

A postdigital stance allows us to consider critical influences connected to social, economic, political, and environmental factors in education. This is particularly important in contemporary learning with the need to offer access and tailored learning opportunities. The UNESCO Sustainable Development Goal 4 reports on the importance of ensuring “inclusive and equitable quality education” and the promotion of “lifelong learning opportunities for all” to improve our society (United Nations DESA, 2021). Since their inception universities have been seeking ways to address the SDGs and develop strategies to achieve them. To actualise these aspirational goals there must be consideration of the learning experiences of all students and the sociomaterial and sociocultural circumstances influencing their learning. Before inclusive and equitable education can become a reality, there are challenges to consider and address, such as digital equity, teacher and student expectations, empowerment, disempowerment (Gourlay et al., 2021) and the semantics of teaching and learning. In what follows, I discuss two critical issues in contemporary higher education: the need to equip students to be active citizens in society and the

importance of acknowledging existing inequities in teaching and learning practices in higher education.

3.5.1 Teaching and Learning Design

Over the past two decades there has been a move away from the language of education to the language of learning. Biesta (2019) challenges this change and reminds teachers and educators of Freire's critique of the concept of 'banking education' in which students were seen as empty vessels, objects to be filled by the teacher with deposits of knowledge. Biesta critiques the recent, semantic changes from student to *learner*, teacher to *learning facilitator*, classrooms to *flexible learning spaces* and the commodification of education with a focus on the objects (learners) meeting the learning outcomes, to become graduates who 'fit into' the status quo, rather than thinking beyond it. Instead, he argues that the purpose of education is for students to be free to try and fail, to explore, experiment, create and consider the big issues facing humanity, vis., democracy, peace, caring for humanity and our planet, so that they may fully participate as active citizens in society. The essential elements of teaching, according to Biesta, are students, and teachers who bring the students' attention to the world and their engagement with it. In this thesis, I examine these aspects within each case study, with the hope of finding students, informed and guided by lecturers, who can contribute to 'big picture' conversations essential in caring: for people seeking healthcare, for humanity and for our world (Biesta, 2017).

3.5.2 Digital In/Equity

The complex nature of digital inequalities in modern society has been appraised by Czerniewicz (2018) who highlights the existence of three core types of inequality: vital, resource, and existential. Vital inequality acknowledges the challenges of access to learning opportunities, the consequences for success in learning and the subsequent impact on quality of life. Resource inequality includes technology, connectivity, devices, data, subscriptions, access to power and flexible learning options. And lastly, existential inequality concerns aspects of power and agency, the nature of relationships and who makes decisions. These aspects were considered and acknowledged in the analysis of the case

studies in this thesis, for example, in relation to how cultural elements were expressed in design for learning, and the impact of not having access to needed digital resources by some students.

While there is a growing trend towards postdigital learning experiences in education this does not denote unfettered access to technology, nor full participation (Czerniewicz & Carvalho, 2023). The authors note that the pandemic exposed inequities that were hidden when students were attending classes on campus. Such digital equity is related to access, use, effects of use that influence and potentially exacerbates socio-digital disparities. Awareness of the influence of these factors perpetuating disparity is essential in ameliorating their effect on students, teachers and society. The coalescence of sociomaterial and virtual spaces can perpetuate inequalities and privilege in digitally enhanced learning environments. There is a clear need for collaborative and cooperative learning in which learners are not merely consumers but active participants in the transformative and emancipatory experiences that teaching and learning can create.

3.6 Emergency Requirements of the Covid-19 Pandemic

Emergency requirements of the Covid-19 pandemic showed that a rapid pivot to teaching and learning in online contexts was challenging and, at times, impossible particularly in situations of confined living spaces, caregiving responsibilities, inadequate internet connectivity or a lack of time to incorporate learning design principles (Allen, 2021; Cummings et al., 2023; Gutman et al., 2024; Otto et al., 2024). However, emergency remote teaching was a temporary solution to a pandemic (Hodges et al., 2020). Despite this rapid emergency pivot there were examples of successful delivery incorporating design principles within the constraints of the pandemic environment (Kawasaki et al., 2021; Otto et al., 2024; Ribeiro et al., 2024). Green et al. (2020) reported on the transition of a course from blended learning to fully online delivery during the Covid-19 pandemic. This incorporated design elements to support engagement vis., flexible timing to accommodate learners who were parents or essential workers in healthcare and additionally became less threatening for students with

anonymous live polling supporting engagement without embarrassment of giving an incorrect answer, and the ability to turn off the camera for privacy.

Data collection for this doctoral research occurred during the pandemic-induced, initial emergency pivots, and later, during periods of adjustment and redesign to provide learning during a series of unpredictable subsequent lockdowns. While teachers may design a learning session with specific activities, knowledge and resources to achieve planned learning outcomes, learner characteristics, environment and expectations will influence what eventuates. Covid-19 restrictions required the quick redesign of courses for fully online delivery resulting in teachers identifying their difficulty in 'reading the *Zoom* room' to react spontaneously to student needs (Green, 2022). These teachers expressed a sense of loss in their inability for live improvisation and the consequent need to design for learning with contingencies for multiple possible situations that might occur in a teaching session. This pointed to a need for flexibility in unpredictable learning spaces to adjust to changing requirements on the flow (Gourlay et al., 2021). For teachers to be able to capitalise on the resources available to them, Stec et al. (2019) recommend they have time to explore the use of technology to support their teaching. However, during the pandemic there was little time to calmly explore how to use digital technologies for teaching and learning. The authors note that even in everyday scenarios, most often technology is used to substitute or augment a lesson rather than transforming the learning experience to support learners to apply their knowledge.

There has been an ongoing assumption that learning in physically, co-present rooms is the 'best' way for learning to occur but the emergency of a global pandemic required changes, initially viewed as a temporary change until there could be a return to what was normal, ideal, back into co-located classrooms. Indeed, Morris has raised the issue of 'panic-gogy' (Baker, 2020; Kamenetz, 2020), a combination of the words panic and pedagogy, to describe the pandemic induced translocation of classroom teaching and resources directly into an online environment without consideration for creating space for community while navigating Covid-19-related challenges. As discussed in the

previous section, Bayne et al. (2020) contend that well-designed online learning environments can also privilege optimal learning by removing known constraints present in traditional classroom environments. The case studies in this thesis discuss some of the experiences of changing requirements and dynamics, during the pandemic emergency pivots, challenged preconceived notions of teaching and learning in Aotearoa New Zealand.

3.7 Aotearoa New Zealand Context: Te Whare Tapa Whā

This doctoral research is situated in the health division of a higher education institution in Aotearoa New Zealand. In acknowledging the location and composition of case-study participants within this country, I have therefore included te ao Māori perspectives in my research, bringing an authentic and relevant indigenous lens to the project. Integral to these health education case studies is Te Whare Tapa Whā a uniquely Aotearoa New Zealand holistic framework for considering health and wellbeing (Durie, 1985).

The Te Whare Tapa Whā framework uses the concept of the (te) four (whā) walls (tapa) of a house (whare) as representing four foundational, interrelated and synergistic pillars of a person's lived experiences, with each wall providing symmetry and strength (Durie, 1994; Durie, 2021). The first wall, Taha Wairua focuses on lifting the spirit and, while not aligned to a denomination or church, includes relationships with kaumātua (respected elders), korero (Māori language), karakia (incantations of prayer) and with the whenua (land). The second, Taha Hinengaro focuses on a person's emotional and psychological wellbeing, easing of the mind, and incorporates thought processes and feelings. The third, Taha Tinana focuses on physical health and strengthening the body, integrating specific practices for behaviour relative to bodily functions, separating sacred (tapu) from common (noa). The fourth wall, Taha Whānau, is focused on collective wellbeing, empowering the family, support networks and the relationships between people.

This holistic framework was initially presented as a "concept of health as an interaction of wairua, hinengaro, tinana and whānau" (Durie, 1994, p. 70) that is "firmly anchored on a spiritual rather than somatic base" (p. 71). Later that year,

Te Whare Tapa Whā was introduced to a health hui (meeting) at Palmerston North Hospital, New Zealand by Sir Mason Durie, the Director of Psychiatry. This framework is now well established in healthcare practice and is incorporated into multiple Aotearoa New Zealand settings, including, but not limited to, government (Ministry of Health, Ministry of Education, Oranga Tamariki), education (Ako Aotearoa, Te Kete Ipurangi) and healthcare organisations (Te Whatu Ora, Health Quality Safety Commission, NZ Mental Health Foundation, Aotearoa New Zealand Social Work, Nursing Council of New Zealand, Pharmacy Council, Medical Council of New Zealand). While Te Whare Tapa Whā framework is already embedded in most Aotearoa New Zealand healthcare contexts, this research will also examine this framework in relation to hybrid learning design in higher education health contexts, and in doing so, bring in a unique indigenous perspective and relevance.

Incorporating a te ao Māori lens on this research is essential primarily to examine, and perhaps also challenge, inequities existing in the education system that has roots in the colonisation of Aotearoa New Zealand and the subsequent plundering of tribal whenua (land) and taonga (precious resources or objects). This loss of whenua reverberates still to the present day, with iwi (tribes) across Aotearoa New Zealand seeking redress through the Waitangi Tribunal (Durie, 2021). Durie notes the influence of the Māori renaissance in addressing historical and recent colonisation impacts, which is increasingly evident in the resurgence of mātauranga (knowledge, wisdom), noticeably by rangitahi (young people) who are confident in both Te Ao Māori (the Māori world) and Te Ao Whānui (the world beyond Māori). He emphasises the interconnectedness of mātauranga, kaupapa (plan, agenda, objective), and māramatanga (enlightenment) as part of an ecosystem bringing forth a shared benefit for the entire community. This perspective aligns well with the ecological perspectives and ethos of my research and offers a culturally relevant, innovative and novel lens to complement existing Western views in learning design for Aotearoa New Zealand learning contexts.

3.8 Learning Design Frameworks

Learning design is part of the everyday work of teachers in higher education. It involves educators making choices about how knowledge might be sequenced and paced in a lesson, what different types of tools their students might use, whether students will be working in groups, individually or in pairs, and so on (Goodyear et al., 2021). Learning design often involves decisions that will impact how courses or discrete learning events might unfold.

Designing for optimal learning and training originated during the Second World War. Initially known as instructional design (ID), and with roots on a behavioural paradigm, the focus was on systematising the development and execution of the learning process and resources to support complex problem solving and improve performance across a range of settings (Reiser, 2001). More recently, Mor et al. (2015) contended that despite the exponential growth in the development and use of technology within teaching and learning, learning design still lacks solid theoretical foundations, with a plethora of definitions and terminologies. They argue that this often results in confusion and ambiguity, and has prevented a common understanding of theory, practices and validated ways of assessing the effectiveness of technological learning tools.

There are many learning design frameworks and models in the research literature to guide educators in making these decisions. These frameworks enable analysis and support the design of courses and learning events. Bower and Vlachopoulos (2018) reviewed 21 recent frameworks stating that most seem to be based on a social constructivist epistemology, and focus on conceptual, or methodological and procedural aspects, or a combination of these. For example, learning design frameworks can be categorised in relation to the degree of granularity—task, module or course focused; their incorporation of specific contextual influences; their integration of interactions between students and teachers; their provision of guidance on incorporation of technology; and lastly, evaluations of the model. This consideration of varied design elements is intended to challenge and support teachers and learning designers to generate bespoke designs to incorporate potential ontological variations appropriate to their specific contexts.

Similarly, Conole (2020) also reviewed several frameworks to support teachers and guide practice, including frameworks that help to identify key features of learning designs, such as pedagogically informed decisions, consideration of appropriate use of technology, guidance for the design process, provision of visual representation of the design, and support for discussion and sharing between multiple people or to guide individual design. One of these, the Conversational Framework developed by Laurillard (2013) foregrounds the role of the teacher in hybrid learning environments as a fundamental aspect in design for learning. A key concern here, is how a learning event might both support learning to occur and enable learners to actualise their learning potential.

Drawing on the *Conversational Framework*, the ABC Learning Design toolkit (Laurillard, 2013) uses visual storyboarding to assist teacher-designers to consider six types of learning activities and the sequencing of them in relation to desired learning outcomes. Activity types include: acquisition, collaboration, discussion, investigation, practice and production. Consideration of these elements can provide a rich and cohesive learning experience focused on learning outcomes shifting designer thinking to beyond just content. The toolkit can support teacher-designers to articulate what is important in the learning design within a course. It also provides an overview perspective of what types of activities are being used and identifies an over or under-use of specific teaching and learning strategies. This framework is primarily based around what teacher-designers are providing within a learning experience for students rather than seeing the whole learning experience within a broader ecosystem of contributing factors influencing what learning emerges.

Another empirically founded framework, *The 7Cs of Learning Design* (Conole, 2020) focuses on learning design resources and activities to guide educators in the design process. Aspects for teacher-designers to consider include: establishing a vision (e.g., conceptualise); identifying activities (e.g., create, communicate, collaborate, consider); synthesising (e.g., combine); and implementing (e.g., consolidate). While this framework enables teacher-designer to incorporate elements beyond merely focusing on content, it does

not take an ecological perspective to include consideration of sociomaterial and sociocultural influences on emergent outcomes of co-construction of knowledge.

Agostinho et al. (2020) assert that research on learning design in higher education can identify ways in which educators plan, structure and document learning activities supporting other faculty to develop their teaching practice. They suggest a graphical, representational approach to learning design identifying three aspects essential for students to achieve the learning outcomes of a learning event. These are: the resources used (static or dynamic) and the support provided (pairs, groups, teacher-facilitated), which then enable learning tasks to be realised. Their research findings support the use of this framework to enable educators to purposefully design learning elements; share and use designs with other educators; in addition to reviewing, documenting, reflecting, and iterating designs for future learning events. Agostinho and colleagues (2020) note that design elements lack visibility and contend that the use of a design tool might enable design elements to be appreciated, and lead to an evidence-based, holistic approach to learning design. However, the nexus of learning design and student learning outcomes remains elusive (Brown et al., 2019).

Many design frameworks present valuable ideas potentially addressing complexity of designing for learning within higher education, but most do not address how best to represent the network of inter-connected elements in hybrid environments (Gil et al., 2022). To appreciate nuances within a NL environment it is important to gain an understanding of the purpose/s of the learning, tools and resources used, students and teachers, types of tasks, strategies supporting learning, and specificities relevant to the cultural context.

Hybrid learning environments are complex and analysis requires much more than an inventory of its elements. After reviewing the learning design and design for learning literature, the Activity-Centred Analysis and Design framework (Goodyear & Carvalho, 2014) was chosen for this doctoral research because it provides a robust, theory-driven, data-rich method of examining and analysing complexity in learning situations. This framework has been used

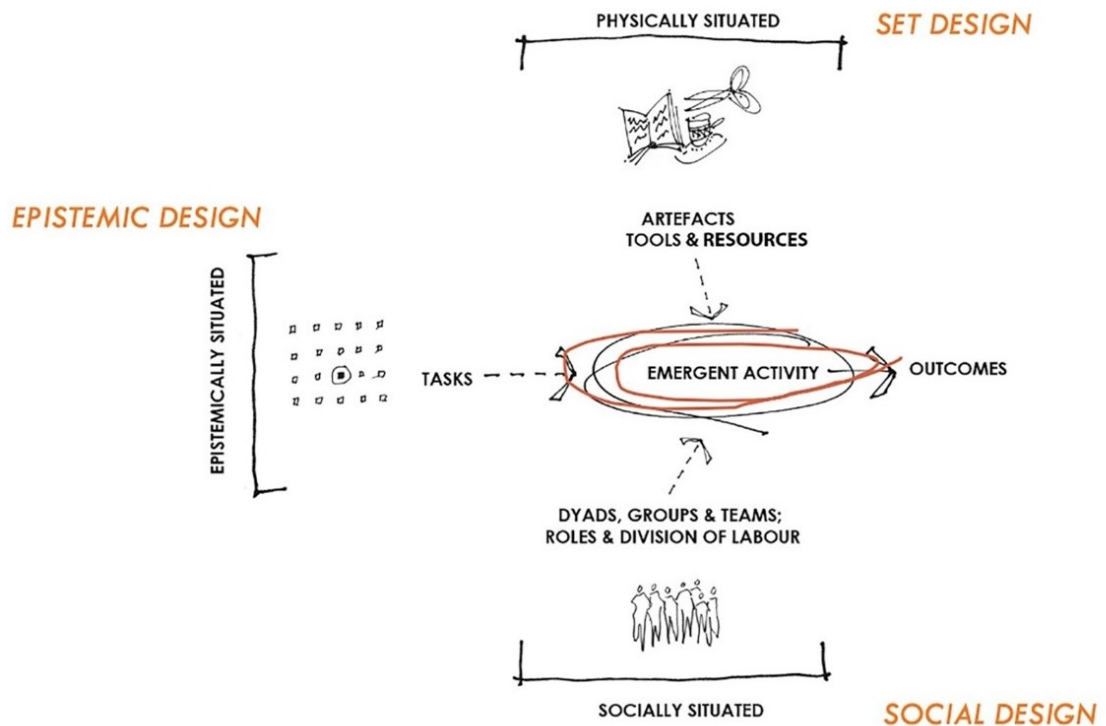
extensively internationally for over the past decade and has the capability to help researchers identify and abstract complex design features in higher education (Bülow, 2022; Carvalho & Goodyear, 2014; Green et al., 2020; Sun & Goodyear, 2020; Yeoman & Wilson, 2019).

3.8.1 Activity-Centred Analysis and Design (ACAD) Framework

Figure 3.2 the Activity-Centred Analysis and Design (ACAD) is a meta-theoretical framework (Goodyear & Carvalho, 2014; Goodyear et al., 2021) providing a way to examine complex learning situations while being cognisant of their specific, local contexts. The versatility of the ACAD framework is evident in a variety of contexts including published health education research studies: students using mobile technology on practicums (Trede et al., 2019), a multidisciplinary, digitally augmented biosciences lab (Hinton et al., 2017), game-based networked learning (Castañeda et al., 2022) and designing synchronous hybrid learning spaces (Bülow, 2022). ACAD is an appropriate framework for the current study because it is not bound by one or more learning theories. ACAD can fulfil the dual purpose of understanding the current learning situation while also signalling a redesign potential. ACAD foregrounds learning as an epistemically, socially and physically situated activity visually represented in Figure 3.2.

Figure 3.2

ACAD Framework



(Adapted from Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (p. 59). Routledge. <https://doi.org/10.4324/9780203591093>)

Analysis, using the ACAD framework, supports examination of the relationships between the three design dimensions and their influence on Emergent activity (co-creation and co-configuration):

- *Set design*: The design of material and digital elements in hybrid spaces (both online and face-to-face) – including tools, resources and artefacts, the furniture or learning items used, how items are positioned in space.
- *Epistemic design*: The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources for meaning making.
- *Social design*: The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of

collaboration – in the group space or in assessment, the role of the learner as a recipient, participant or as creators of knowledge.

- *Co-creation and co-configuration activity at learn time*: Co-creation of knowledge emerging within a learning event. It relates to the agency of learners, and their ability to interpret and chose what to do.

A key feature of ACAD is that it distinguishes between two key moments: the design phase and the learn phase, with consideration of both the complexity of designing for a learning situation, and the possibility of identifying opportunities for redesign. This focus positions ACAD as a valuable analytical resource for exploring the three cases in this multiple case study research. In this study, co-creation and co-configuration activity involves student learning activities in hybrid settings; considerations about the experience of diverse learners, contexts and disciplines in healthcare; the experience of educators teaching within these environments; and what those involved believe contributes to productive learning environments.

To provide clarity on terminology used within ACAD, Goodyear et al. (2021) explain commonly used words and their meanings.

Learn-time – the activity emerging as a result of students' interactions with elements in set, epistemic and social design and within a learning situation.

Activity – what the participants are actually doing within a learning situation, which may or may not be what the teacher or learning designer had intended.

ACAD emphasises the importance of the nature of this activity and what emerges at learn-time.

Learning situation – learning activities are always 'physically, socially and epistemically situated' (p. 446).

Local – highlights the specific context where the learning activities are situated. This acknowledges the agency of teachers and designers to review and understand a learning situation and redesign aspects in an iterative process (Goodyear & Dimitriadis, 2013).

Complex – ACAD is not bound by a specific learning theory or theories but can fulfil a dual purpose of understanding the current learning situation while also signalling redesign potential.

Teacher – encompasses those who support the learning of others within their professional roles.

Learning/Instructional-designers – specialist roles in learning design.

Teacher-designers – when the focus is on design aspects within the teacher's role.

The ACAD framework is agnostic in terms of design theories but has a clear emphasis on the importance of it making sense in local contexts and on informing design decisions (Goodyear et al., 2021). Currently, ACAD does not incorporate analysis of cultural influences and perspectives in design for learning. As such, this research proposes an extension of the original framework, going beyond sociomaterial elements, providing framing for sociocultural considerations in the health education contexts. Additionally, this revised framework uses 'task design', in lieu of the original 'epistemic design', so that this dimension of the framework is more accessible to a wider design for learning audience beyond HE contexts.

3.9. A Design for Learning Framework for Aotearoa Health Educators

A key contribution (output) of this research is a new learning design framework developed during the analysis phase that builds on the ACAD framework and incorporates a cultural component with holistic elements from Te Whare Tapa Whā (Durie, 1985). In figure 3.3, ACAD elements are represented under cultural components that are relevant to the context of higher education health contexts in Aotearoa New Zealand.

Figure 3.3

Aotearoa Design for Learning Framework

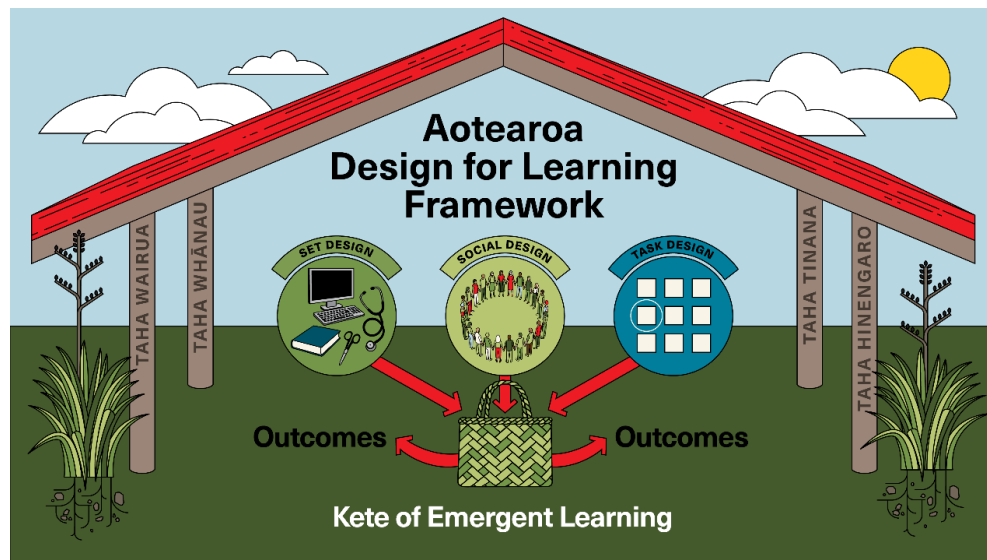


Figure 3.3 acknowledges the importance of incorporating sociological and ecological aspects to provide a holistic perspective. These aspects are represented by the four pillars of a whare (house) symbolised by Durie (1994) in the health construct Te Whare Tapa Whā, in relation to the learning design considerations; the health and wellbeing of those involved in teaching and learning in higher education; and it takes a holistic view of people within the healthcare contexts within which our graduates will be working.

- This new framework proposes that:
- Task is connected to Taha Wairua – beliefs drawn from the big picture about what students need to learn.
- Socially situated relates to Taha Whānau – relationships that assist student learning.
- Set / physically situated relates to Taha Tinana – the setting has psychosomatic influences on the learner.

Emergent learning is connected to Taha Hinengaro – thought processes and cognitive/mental changes occur for learners through the activity that emerges.

3.10 Summary of Chapter

This chapter discussed ecological approaches to learning and teaching highlighting the importance of acknowledging the human and non-human aspects influencing an entire learning ecosystem. Such a theoretical perspective can incorporate diverse, entangled, and emergent elements characteristic of complex learning ecologies. Core educational assumptions, such as the importance of collective inquiry and knowledge co-creation within networked learning, the influence of postdigital teaching and learning contexts, and an appreciation of the foundational influence of a te ao Māori perspective in Aotearoa New Zealand higher education were also discussed. Key contemporary design for learning frameworks were appraised and models compared, before introducing the Activity-Centred Analysis and Design (ACAD) as an appropriate, empirically validated and robust framework to guide the current research inquiry. Finally, the chapter presents a novel approach to design for learning in HE in the creation of the Aotearoa Design for Learning Framework which situates ACAD within Te Whare Tapa Whā principles, establishing a place to explore learning design in the cultural context of Aotearoa New Zealand.

The following chapter will outline the methodology chosen for this doctoral research and provide justification for decisions made during the research.

Chapter 4. Methodology

4.1 Introduction

This chapter outlines the methodology and methods employed to build on the theoretical foundations, discussed in Chapter 3, and address the research questions. The aim of this PhD research is to explore design for learning within the health division of a higher education institution during and immediately post Covid-19, with a focus on characteristics of productive, hybrid learning environments.

Grounded in a social constructivist epistemological paradigm, the study adopts an interpretivist stance to explore the complex interplay between learning design, students, teachers, and activities within higher education health contexts. The theoretical frameworks, described in Chapter 3 (ecological perspectives, the Activity-Centred Analysis and Design (ACAD) framework, and Te Whare Tapa Whā) inform research design and methodological choices providing a lens to examine hybrid learning environments.

To operationalise these frameworks I adopted a multiple case study approach (Stake, 2006), which aligns with a social constructivist philosophical standpoint (Jackson, 2019). This approach guided the framing, planning, and gathering of data from diverse sources to enable a rich understanding of productive, hybrid learning environments.

Reflexivity and acknowledgment of my insider perspective are integral to the research, ensuring transparency and enhancing trustworthiness. As this research involved observations and interactions in live, synchronous and asynchronous teaching sessions, it is paramount to ensure that consideration is given to the rights and protections of students and teachers to ensure their safe involvement.

The chapter begins with a detailed discussion of the research design, data collection and data analysis methods. Subsequent sections address trustworthiness, ethical considerations and research challenges.

4.2 Research Design: Multiple Case Study

Research design establishes parameters to guide the investigation of research questions and to address challenges that arise during a research project (Polit & Beck, 2022). Such design informs ethical considerations, how the data will be analysed, and reports limitations and challenges. Clarifying these elements at the outset establishes the applicability of the methodology and methods chosen for the study and confirms their appropriateness in regard to the research questions, study aims and research paradigm.

An ontological view holds that there are multiple realities and what is seen depends on the perspective of the individual, is socially produced, and understood through interaction. I adopted a multiple case study approach (Stake, 2006) to framing, planning, and gathering data. I drew on a variety of sources to explore and gain insights, which allowed for a richer understanding through perceptual and informational breadth of the study phenomenon. Stake (2006) articulates an approach that resonates with the social constructivist philosophical standpoint best suited to the current research inquiry.

According to Stake (2006), case study research is most appropriate when investigating programmes and people. He suggests that a focus on issues allows a researcher to examine “complex, situated, problematic relationships” as opposed to information gathering, questions or testing hypotheses typically found in experimental studies (p. 10). Multiple case study design was chosen as it provides an opportunity to explore educators’ and students’ lived experiences and to examine features of course design that contributes to productive learning environments. Such a focus identifies environmental or contextual features that influence the cases. Stake (2006) contends that the boundary between environment or context and the case may be blurred. Nevertheless, articulating these aspects is important to understanding a case. My ability to portray the essence of each case so that a reader can see and understand both its breadth and nuances is imperative.

Case study research foregrounds the importance of differentiating between a case and the activities that occur within a case (Stake, 2006). Stake explains this as the difference between a case (an entity) and how that case ‘functions’

(the activity that occurs within the situation of that case). A team's activity on its own is not the case. However, these activities influence what is seen, experienced, and understood by those within the case. Stake takes a holistic view of a phenomenon and identifies the essential aspect of subjectivity in understanding the phenomenon (Boblin et al., 2013). Each case within a grouping of cases must be understood independently. This is because each case is directly influenced by the context and specific aspects of its situation. The context influences the experience, the interactions within the experience, and the interpretation and the insights that emerge (Stake, 2006).

In this study, a multiple case study approach was adopted in the investigation of three undergraduate health education courses in a multi-campus higher education institution in Aotearoa New Zealand. Health education topics have been taught at this institution for 50 years. The health disciplines involved include social work, nursing and bioscience with the ecology of each case considered as part of a complex and integrated system. The undergraduate courses included in this research had class sizes that ranged from 59 to 175 students and there were variations in hybridity (synchronous and asynchronous, fully online, partially online, experiential activities and written scenarios for discussion). This variation represented the broader context for higher education health courses and was perceived as an effective way to observe, analyse and develop an understanding of the ecology of each course.

Following the ACAD framing (discussed in Chapter 3) each case included the structure of each course, the elements that relate to that course (tools, tasks, people, ideas, knowledge), and the emergent learning activities that occurred. This provided a bounded situation within which the activities that occurred in each case were studied. Each course was seen as part of an integrated system fitting the criteria Stake (2006) described as required for a case.

Hybrid learning environments in higher education contexts often include networks of inter-connected elements (Gil et al., 2022). Developing an understanding of the practical realities for people involved in this setting is essential to considering the nuances within networked learning environments,

including sociomaterial aspects, embodied engagement, and the complex entanglements of postdigital contexts. This research project examined structural design elements and activities present in hybrid learning environments to conceptualise how a learning environment functions and to gain an understanding of the perspectives of those involved. This research has been guided by the following overarching research question and sub-questions:

What are the characteristics of productive, hybrid learning environments in higher education undergraduate health contexts?

- How do students and academic staff characterise productive learning activities within hybrid learning environments?
- How do learning design elements in hybrid learning environments influence and support student experiences?

Multiple case study design is well-suited to explore the complexity of productive, hybrid learning environments within the ecology of each case providing breadth and depth to situated contexts.

4.2.1 A Quintain

In acknowledging the differing views of case study research highlighted in the literature (Merriam, 1998; Stake, 2006; Yin & Campbell, 2018) it was necessary to clarify how key features were expressed in the current study. Stake (2006) noted that there can be a tension in relation to the purpose of the research, for example, when the focus is solely on the case in a specific location, an “intrinsic” case study, or when the focus extends beyond a case to generate a wider understanding, as in “instrumental” or multiple case studies. He noted that researchers differed in their interpretation of these aspects, despite the “case” being the entity that is examined and the conclusions reached are the result of the process of inquiry. As such, each case in this study is primarily instrumental, however, to explore what characterises productive, hybrid learning environments, the commonalities and differences within and between cases are identified. In taking an ecological approach to educational design this research focuses on understanding relationships between people while exploring the structure and the functioning of a learning environment (Markauskaite et al.,

2023). Such analysis allows educational researchers and designers to understand what works well and why, within an environment that is crucial for educational innovation and for the re-design of a specific environment or to identify key reusable elements useful in other innovative learning environments (Goodyear & Carvalho, 2014).

To support an understanding of the cases within this research I drew on a view of multiple case study, which holds that research begins with a quintain (pronounced kwin'ton) (Stake, 2006). A quintain identifies the object, phenomenon or condition to be studied - a target, but not a "bull's eye" (Stake, 2006, p. 6). The researcher must make sure to aim at a target that is not too narrow, nor too broad. A quintain helps to contain breadth to maintain the focus on the key target, while sustaining awareness of the influences at the edges and how the periphery might influence the phenomenon being studied. Adopting a multiple case study design in the current research allowed me to move beyond a single case to consider aspects bounded by the quintain for each of the cases and to examine elements within each case separately.

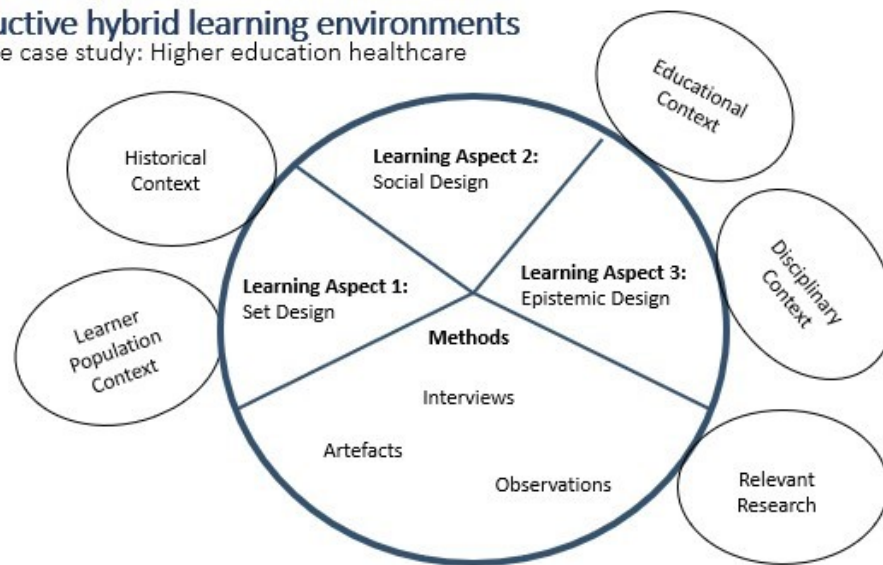
Stake (2006) highlighted the importance of contextual influences on a case, denoted by the outer bubbles as seen in Figure 4.1. This awareness enabled me to consider the influences on each case, while the details within the central circle related to specific aspects within a case in the data collected and in relation to ACAD elements that were evident in that case. Stake notes that the quintain enables a researcher to hold the peripheral and central aspects in balance to ensure that emerging issues are identified and critiqued. I have adapted the features presented in the quintains to formulate my research questions, to guide the methods used for cases, and to identify emerging aspects of the ACAD process in relation to specific contextual influences.

Figure 4.1

The Quintain Used for Each Case

Productive hybrid learning environments

Multiple case study: Higher education healthcare



Adapted from: Stake (2006)

The focus of sampling in qualitative research is to explore a central phenomenon deeply (Creswell & Guetterman, 2019). In alignment with multiple case study research strategy (Stake, 2006), qualitative data gathered using a quintain approach can provide comprehensive responses to the current research questions. The description of the quintain for each case is developed through detailing experiences and the perceptions of people and their interactions within each course environment. The quintain supports thick description and interpretation of aspects that exist within its boundary and examines phenomena across each of the cases. Before discussing the data collection and analysis, a description of the research setting is provided.

4.2.2 The Setting of this Research

This research was conducted in the health sciences division of a HE institution in Aotearoa New Zealand after the initial Covid-19 pandemic of 2020 but during subsequent periods of lockdown in response to increasing cases of the virus in specific geographical locations. During the pandemic there was an emergency pivot to remote online learning (Green et al., 2020) necessitated by lockdowns, however, this research afforded an opportunity to explore innovations that emerged in hybrid learning environments, beyond the initial crisis responses.

The research is influenced by aspects of each case study in addition to elements related to Aotearoa New Zealand settlement history, colonisation, and the ongoing relationship between the first peoples on the land (Tangata whenua) and descendants of the British Crown, and other later arrivals (Tangata Tiriti). Please refer to Chapters 3 and 7 for discussion on the historical roots of bicultural partnerships in Aotearoa New Zealand, and analysis of how indigenous learning practices were implemented through course design.

In broader terms, students and teachers within the case studies represent both tangata whenua and Tangata Tiriti heritage perspectives. Taking an ecological approach enabled the researcher to explore how those involved in the context of higher education health courses designed for culturally responsive hybrid learning environments to enhance students learning experiences.

4.2.3 Participant Selection

The selection of cases can have a major influence on the depth of understanding of the key phenomena under consideration (Creswell & Creswell, 2023). Stake (2006) suggests three key selection criteria for cases: “Is the case relevant to the quintain? Do the cases provide diversity across contexts? Do the cases provide good opportunities to learn about complexity and contexts?” (p. 23). Participant and case selection in this study was purposive with the intent of elucidating a range of viewpoints, experiences and examples of the phenomenon under consideration across a range of productive, hybrid learning environments (Robinson, 2014). Identifying the research context of health education courses, with a focus on the experiences of people, required closer exploration through the adoption of a range of qualitative strategies, including observing teaching sessions, interviewing individuals, focus group discussions, observation of course websites and artefacts, and recording of researcher field notes.

To purposively select potential courses to include in this study, course coordinators within the HE health division were approached. This health division incorporated several campuses with the courses representing heterogeneity in their design for learning. The researcher explained the study aims and explored

interest surrounding specific courses being considered for inclusion as a case. It was proposed that participation in this research would involve interviews with staff and students, and observations of course websites and teaching sessions. It was essential for participants to be willing and feel able to invite the researcher into their teaching spaces and learning environments; a place where an independent observer of their teaching, learning artefacts, and activities was rare. As such, it was important to gain their agreement (in principle) to participate in the research development process before approaching heads of relevant departments.

As part of the HE institution process for ethical approval a proposal was developed and the researcher approached heads of department leaders who responded with interest. Agreement by heads was required as they were accountable for the courses taught in their departments, and for staffing and student learning experience. Of the five potential undergraduate courses identified, three were selected because they offered diversity in the higher education health context in respect to discipline, student number, and academic year group. In addition, the timetabling for courses across successive semesters enabled observations of courses.

The three courses included within the health sciences division of a higher education institution were:

- third-year undergraduate social work course (~60 students)
- second-year undergraduate pharmacology course (~170 students)
- third-year undergraduate nursing course (~145 students)

The design of each course is described in Chapters five to seven and in 'Designing hybrid spaces for learning in higher education health contexts' (Green, 2022).

The criterion recommended by Stake (2006) was applied to the selected cases and was relevant to the quintain. The cases were diverse and provided opportunities to examine complexity within and between their individual contexts (see Table 4.1).

Table 4.1*Case Study Details*

Case Study	1	2	3
Course	Social Work	Pharmacology	Nursing
Year	3	2	3
Student (N=)	59	175 (172 nurs)	152
Interviews			
Students	2	4	5
Teachers	3	2	3
Other academics		11	

To gain an ecological perspective on the higher education health environment and to incorporate the influences around the edges of each case additional academic staff were approached. These included 11 staff focused on Māori and Pacific students, specialist librarians, academic writing support, disability support, student academic success and staff involved in teaching and learning within the institution. From this point, academic staff are referred to by their participant number.

4.2.4 Data Collection

A range of methods were used to collect data because of the complexity of cases, the variety of disciplines, content and people involved. This included observations of live teaching sessions online and in-person, teaching resource artefacts, 24 semi-structured individual interviews and three focus groups with teachers, students, learning designers, academic dean and academic support staff (see Table 4.2). Data were collected over a 24-month period between 2021 and 2023.

Table 4.2*Data Gathering Strategies*

Interviews	Focus groups	Observations	Artefacts
Lecturers	Students	Course websites	Course documents
Students	Teaching teams	Learning sessions	Learning activities
Learning designers			Resources
Other academics			Website content

Each course coordinator was given research information sheets and consent forms for teaching staff interviews, and for observations of teaching sessions and course websites (see Appendix 4). Subsequently, all teaching staff in each course consented to be interviewed ($N = 8$) and each of the course coordinators identified a teaching event where the researcher would observe course activity through access to the learning management system or on a physical site. Each of the teachers initially introduced the research and researcher via the course learning management system (LMS) forum message. The researcher provided a brief video introduction to the project to inform students of the sessions and course resources that would be observed. Along with this a student information sheet for the lecture space observation explained the purpose and the option to opt out of the research (Appendix 4). Students were assured that data would be treated as confidential, and that the researcher would not have access to any assessment or gradebook information. It was important to assure students that their involvement or non-involvement in the research would not affect their academic coursework or grades.

After observation of observed teaching sessions students were invited to participate in focus group interviews. Informed consent was gained without coercion or pressure to join the research project. Focus groups were originally planned to be in-person, however, due to the changing nature of Covid-19 lockdowns and the need for emergency remote teaching, some interviews were conducted online using Zoom software. Additionally, some focus groups became individual interviews, for example, when a participant was deemed essential workforce during the pandemic and could not make the focus group.

Interviews

Interviews in this research provided insight into participants' experiences of various components influencing hybrid learning environments (Brinkmann & Kvale, 2015). As discussed in Chapter 3, productive learning environments involve digital and material tools, pedagogy, and the people engaged in collaborative work who co-create through knowledge building processes. The interviews revealed participant points of view and informed the case study beyond the observations and viewing of documents and artefacts (Stake, 2006).

The semi-structured interview schedules introduced a range of topics and questions relevant to the participant's role (Brinkmann & Kvale, 2015) and provided an explanation of hybrid learning environments (see Appendix 5). These interview schedules drew on previously developed protocols, used in the analysis of productive learning networks (Carvalho & Goodyear, 2014), which were refined to align with the focus and aims of this doctoral research. Schedules were sent to participants prior to their interview and they were invited to respond during the interview to whichever aspects they saw as relevant to their role, experience, and context (Stake, 2006).

Importantly, the interviewing schedule followed specific cultural expectations and format relevant to Aotearoa New Zealand healthcare settings. Cultural processes incorporated the hui process (Lacey et al., 2011) and the four phases that imbue te ao Māori principles of interaction supported the development of a culturally safe interview space. These phases included: the *mihimihi* to acknowledge and welcome a person/people to the interview; *whanaungatanga* to enable the participants to make and acknowledge connections with each other; providing a clear description of the purpose of this interview to establish the *kaupapa* (foundational principles) to facilitate a shared understanding of the purpose and scope. And at the interview conclusion there was an opportunity for a *poroporoaki* response, which enabled those involved to acknowledge what had occurred within the encounter before closing. Each of these cultural processes acknowledges the contribution of the interview participant's expertise and respects their mana (personhood, standing) in contributing to the project (Lacey et al., 2011). While the hui process provides a Māori centred approach

to the interactions, this culturally responsive approach can be appropriate to people of different cultures.

Gaining an understanding of participants' backgrounds supported interpretation of situations or experiences and was a key feature of the interview (Stake, 2006). The inclusion of the hui process (Lacey et al., 2011) provided a framework to establish an effective interview environment. In the context of Aotearoa New Zealand, the incorporation of these key relationship concepts contributed to creating a culturally safe environment specific to each participant and laid a foundation for rich data capture.

The development of interview questions involved awareness of the fluidity between contexts and spaces and the need to consider the entangled nature of sociomaterial and sociocultural aspects (see Chapter 3). Given that these are key aspects of hybrid learning environments, it was important to consider how the interview questions might best acknowledge these entanglements. For example, participant 1 (P1), coordinates a distance course that includes one weekend of face-to-face noho marae activity. They note, "a huge online presence... I use forums and blogs... then I have a [*names LMS*] presence" through video presentations, tutorials, and discussions. They incorporate te ao Māori concepts of being a collective within their course *kaupapa* (foundation) such as when there is not enough activity on a module forum discussion, the following module is not opened "we all move forward together. No one is left behind" (P1). This response indicates that the questions were able to elicit data that demonstrated both sociomaterial and sociocultural considerations.

Data collection occurred in three cycles. The first cycle was with the HE lecturers, the second with students enrolled in the case study courses, and third, interviews were conducted with HE institution staff involved in supporting students and staff design for learning within courses. All interviews (40-60 minutes in length) were digitally recorded using either meeting platform video recording options or phone audio recording. These were then transcribed for analysis.

Many of the participants had prior experience of conducting research. Within the consent process some participants asked to view the interview transcript before analysis to confirm the conversation accurately reflected what they wanted to convey. As this research endeavour is focused on the experiences and perspectives of people involved in HE health teaching and learning, member checking is a key practice in qualitative research to establish the accuracy of interview data and improve final analysis (Creswell & Creswell, 2023) and contributes to a broader understanding of what is occurring within a case (Stake, 2006).

In addition to the interview schedule, a timing sheet was developed to record times and aspects of the interview. This had two purposes, one to allow the participant to talk uninterrupted with specific aspects noted by the researcher who could revisit the topic later in the interview. Second, to enable aspects that stood out during the interview to be noted so that these could be reconsidered during the interview analysis process. The importance of an interviewer providing space for participants to reflect and speak to research elements is imperative if their voice is to be heard. To remind me to listen and not interrupt an interviewee, I used the timing sheet to note topics I wanted to return to for clarification or embellishment. For example, a note was made when participant 17 (P17) discussed a learning resource as this had also been raised in a previous interview and was followed up at the end of this interview.

In addition to individual interviews, focus group interviews were used primarily with student participants. Grech and Cassar (2018) note that online focus groups using a text or audio-based discussion forum can be an effective, low-cost method for enabling research participants to engage with the research on their own terms, where, when and for the length of time that suits their personal circumstances. In contrast, organising synchronous online meetings can be problematic to arrange for a group of participants. As such, technology tools such as Doodle polling, facilitated management of meeting times to find a common time suitable for research participants.

Artefact collection and observations

In addition to hearing from those involved during interviews and focus groups, it was important to observe other elements within each case as part of the process for identifying sociomaterial relations within cases. To do this, course artefacts were collected, including screenshots of the course website, photos of course resources and review of video recorded teaching sessions available to students on course websites (see Appendix 4). Given the changing dynamics during this period of sequential pandemic-related lockdowns, it was possible to attend on-campus and on-marae teaching sessions in two of the three cases.

An outline of the proposed observation of teaching sessions was discussed with the teachers and with their agreement, the outline for these observations was presented to students using the course LMS website.

4.2.5 Data Analysis

The multiple case study research strategy supported a data analysis process that included thick descriptions of the complexities within and across the cases (Stake, 2006). Taking a postdigital stance acknowledges the messy, unpredictable, digital and analogue; technological and non-technological; biological and informational contexts that characterise current learning environments. This research incorporates an analytical critical lens that goes beyond how technology might influence learning to also consider the sociocultural and sociomaterial influences within productive learning environments (Carvalho et al., 2024). As such, the interactions of social and cultural dynamics, human and non-human aspects are considered (Jandrić et al., 2018). Data analysis proceeded with these aspects underpinning my approach.

Each individual case was initially analysed in terms of the observations, artefacts and screenshots gathered from course websites, interviews and records of what occurred. Stake (2006) suggests that examination of multiple aspects constitutes a significant part of the case study. This process enabled depth and breadth of analysis that supported my initial sifting through each element, considering it in relation to its context and those involved, as well as in

relation to the other cases before reassembling the case components into a cohesive, authentic, compelling and defensible story for each individual case as part of this multiple case study.

Throughout the process of data analysis, I took what Braun and Clarke (2022) refer to as a hermeneutics of empathy, seeking to systematically engage with the data to interpret what each person or artefact brought to the case, and to make sense of how these contribute to productive learning environments. This involved paying attention to practices that were incorporated in teaching and learning, along with the values and experiences expressed by participants about what they saw as important, which altogether helped me to consider why these aspects created productive learning environments. The practical application of this process is described in the following sections. Data were collated to create a coherent, contextualised cross-case study identifying the central findings for analysis, allowing for the examination of how multiple elements contributed to productive, hybrid learning environments.

Analysis of interview data

Analysis of interview data aimed to identify characteristics of productive, hybrid learning environments, key design elements and practical outcomes that teachers and the academic teaching and student support staff participating in the study valued within their specific contexts. Nowell et al. (2017) outline six phases of thematic analysis (TA) proposed by Lincoln and Guba, including data familiarisation, initial code generation, theme identification, theme review, definitions of themes and report production. This process guided the analysis of the interview data with teachers and has been reported in Green (2022).

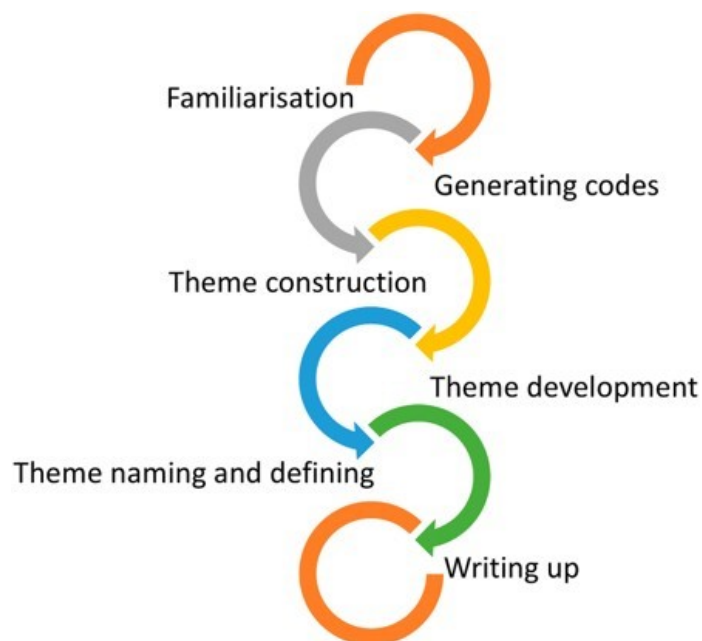
Subsequent to this Braun and Clarke (2022) provided clarification on variations evident in TA research, providing greater clarity on what they believed constituted reflexive thematic analysis. They emphasised the imperative for alignment between a researcher's epistemology, ontology, and axiology standpoints to provide a robust application of reflexive thematic analysis (RTA). The multiple phases of reviewing, considering, and interacting with data to develop meaningful generation of themes was supported by subjective engagement and interpretation of data. Subjectivity is a key feature of what has

been referred to as “successful reflexive thematic analysis” (Braun & Clarke, 2022, p. 55).

Reflexive thematic analysis resonated with my research philosophical perspective and offered a comprehensive nuanced approach to the analysis of the remaining interview data. Braun and Clarke (2022) describe the RTA approach includes six recursive and reflective phases involving prolonged engagement with the data and resulted in construction and interpretation of themes (Braun et al., 2019; Terry & Hayfield, 2025).

Figure 4.2

Six phases of thematic analysis by Braun and Clark



Note: This figure titled Phases of reflexive TA was published in Terry, G., & Hayfield, N. (2025). Reflexive thematic analysis and men's embodiment following injury or illness: A worked example. *Anatomical Sciences Education*, 1-9. <https://doi.org/10.1002/ase.70058> CC BY-NC-ND 4.0

Phase 1 *familiarisation with the data* involved reading through the transcripts to gain an initial sense of the interview data followed by prolonged engagement re-reading to familiarise myself with the data. This manual analysis followed a process outlined by Owen (1984) identifying three criteria within the transcript: 1) recurrence, 2) repetition, and 3) forcefulness to be considered in relation to the overarching research questions.

I also created a spreadsheet for each transcript that included columns for each of Owen’s criteria, a column for relevance to the research questions and a column for my emergent ideas (see Figure 4.3). To support ongoing and efficient reengagement with the data, spreadsheet entries noted the page number, the word, phrase or sentence, the related research question(s) and a brief descriptive comment.

Figure 4.3

Example of Recurrent Ideas and Repeated Phrases

Significant/Recurrent Ideas & Concepts	Repeated Words & Phrases	Forcefulness of Expressions
<p>SP2: Repetition and scaffolding - regurgitated or useful? (p. 1) Admittedly, I was feeling a little bit sceptical about it because I've personally found that some of these papers have been very repetitive, in the degree, like the same information is being repeated a lot, which can be hard when you're paying so much money for these courses, you know, to have the same information kind of regurgitated. I was feeling a little sceptical about it because I really didn't want to just learn about the same thing we've done over the last two years. (p. 1)</p>	<p>SP2: repetitive degree content (p. 1) very repetitive, ... the same information .. repeated a lot, ... the same information kind of regurgitated</p>	

These criteria explained by Zorn (n.d.) identify *recurrence* when two parts of the transcript have the same meaning but not necessarily the same words. This provides a mechanism to differentiate between salient and background elements within the transcript to identify implicit themes.

Repetition requires the exact words, phrases, or sentences to be repeated (see Figure 4.3). *Forcefulness* requires attention to vocal inflection, emphasis, loudness or softness to either highlight or make subservient data elements (see Figure 4.4).

Figure 4.4

Example of Forcefulness

Significant/Recurrent Ideas & Concepts	Repeated Words & Phrases	Forcefulness of Expressions
<p>P13: 3 Words - Empathy (p. 8-9) Identify with students' feelings, where they struggle... can think from their perspective, the difficulty they must have had working on something, or given their situation... I remember a particular case. The student was really very stressed, and she almost cried because she didn't submit the assessment before deadline due to technical issue. Yeah, so really, it's almost a broken down. And I think, I was just trying to comfort her by downplaying this, "It's I think... I honestly... I don't think it's a big issue" and I try to reassure her that her lecturer wouldn't think it's a big deal either. "As long as you explained what happened to you, it was something technical, something out of control", and "you don't need to worry about that. Just clearly explain your situation and I'm 100% sure that your lecturer will understand" maybe it's something that never occurred to the student before. (p. 8-9)</p>	<p>P13: 3 Words - Empathy (p. 8-9) REPEATED "Seeing students who are stressed "yes, yes, yeah, yeah all sorts of students... Some more stressed than others"... "really very stressed" "... the lecturers are all understanding they would, they would perfectly understand the student's situation" (p. 9)</p>	<p>P13: 3 Words - Empathy (p. 8-9) FORCEFULNESS Some more stressed than others. [Visual and verbal acknowledgement] (p. 8) "She was really, really worried about what would happen... A very important assessment"..... "I was just trying to comfort her by downplaying this., "It's I think... I honestly... I don't think it's a big issue" (p. 9)</p>

The process of analysis of an interview transcript involved underlining potential responses to the research questions.

In Phase 2 of the thematic analysis *generating codes*, I inductively identified potential codes in the transcripts. A Miro board (www.miro.com) was used to organise and colour each interview separately before beginning to sort the data into initial codes and then concluding this phase by clustering the eight potential codes: Establishing the learning environments; Andragogy, heutagogy, pedagogy; Effective teaching and facilitation; Conviviality; Rich, realistic teaching and learning; Challenged and equipped; Covid as a disrupter and catalyst; Affect.

This process enabled me to quickly visualize the phases and distinguish between pieces of data as the themes were being generated. Braun and Clarke (2022) note the importance of 'playing and exploring' the data and progressively identifying the significance of what the data is indicating with the Miro board process supporting this analysis. Key in this process is the identification of "patterns of shared meaning around a central organising concept" (Braun & Clarke, 2021, p. 331). As this doctorate is written by publication the iterative process throughout the analysis occurred as the cycles of role specific data collection concluded.

Themes were constructed (Phase 3 of RTA) and captured the “essence and spread of meaning” (Braun et al., 2019, p. 845); they draw together disparate data, may clarify meaning of large sections of data and may represent the analyst’s interpretation of meaning in the data .

Themes were refined (Phase 4 of RTA) using a Miro board to support easy clustering and manipulation of codes to link to the transcript text. Phase 5 RTA involved naming and defining the final themes with the relevant transcript text for each item of data before writing Phase 6 (in Chapters 5, 6 and 7).

From the analysis of interviews with teachers the 12 themes included: Supporting and challenging students; Designing for teamwork and maintaining continuity; Bringing research into authentic learning space; Student activity and indicators of learning; Transformations in course design; Maintaining design continuity; and Improvisational theatre.

Analysis of student data generated seven themes: Becoming aware of extended boundaries in learning; Students value agency and autonomy; Purposeful structure and curated content; Disrupted connections with peers and lecturers; Rich, realistic teaching and learning; Challenged and equipped; and “Making it light-hearted” - Conviviality. The themes in each case study were refined during the writing of each chapter and are presented in Appendix 6.

Six themes were presented in the published book chapter for *Case Study 3 – Social Work: Aotearoa New Zealand Context, Enacting a Māori worldview, Whanaungatanga, Aotearoa identities, racism, privilege and historical trauma, Decolonisation – Mana-enhancing practice, Te ao Māori worldview – Pā harakeke framework.*

Analysis of learning environments

In the previous chapter the Activity-Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014) was identified as an effective way to examine complex learning environments and is thus appropriate for this multiple case study research.

A systematic approach using the ACAD framework (Goodyear & Carvalho, 2014) was applied in the analysis of the learning environments in the current study. Central to this analysis is attention to relations between designable elements and emergent learning activities. As outlined in Chapter 3, the three distinct design dimensions of set, social and epistemic design establish the foundation for co-creation and co-configuration actions by the learners as they reconfigure the initial learning design conceived by the teacher, into non-designable emergent components.

The iterative process of 'zooming in' and 'zooming out' (Goodyear, 2020; Nicolini, 2012) was used to analyse the learning design in activities within the three case studies. This included a series of questions to focus on what is observed in varying actions and situations within learning moments. Such researcher observations are member checked with teacher-designer participants to broaden the perspectives and understandings. For example, in one case study observation I sent my observation notes and thoughts to the lecturers involved and they developed the details to include their rationale for specific content and actions. Application of the ACAD framework took place using a learning design observation template (Green et al., 2023) adapted from Fawns et al. (2021) and included a series of focused questions to initially guide the investigation towards details of what people are doing, saying and considering, and then looks outward to see how these learning design aspects are influenced by, or might influence, the design of hybrid learning generally (see Appendix 8). As I observed and later reflected on my observation of teaching events, I completed the aspects on this learning design observation template. I then sent these to the teachers for review and to gain their perspectives on what I had observed. The process of zooming in and out helped me to establish a detailed perspective of activities and clarified learning intent and pedagogical basis for what occurred within a learning session.

Once the data analysis of the interviews and learning observations was completed, the representation of a quintain, in combination with inspiration from Stake's cross-case analysis worksheet template provided a clear structure for

bringing the threads together into a cohesive whole to undertake a cross-case analysis of findings (see Appendix 9).

4.2.6. Drawing the Research Threads Together

The specific contexts surrounding each course, which were indicated in the periphery of each quintain, were examined and are described in Chapter 8. This supported the researcher to gain an understanding of what ways these contexts influence and are perceived by the people within the case. Stake (2006) contends that the interactivity between the situational, social, cultural and contextual influences and the functions of the case must be described as thoroughly as possible. This means that when differences become evident, within a case in comparison to other cases, these provide an opportunity for closer scrutiny. Stake refers to 'looking for correspondence' which entails looking for patterns when aspects or incidences are happening together. It is the recurrence of these ordinary happenings that are sought, and Stake notes that a broad sweep of what is occurring within a case enables the researcher to consider the influence within a particular case and how this affects each case.

Using the Miro Board process described in 4.2.5, the cross-case data were collated and analysed to create a coherent, contextualised cross-case study identifying the central findings for analysis. Specific contexts surrounding each case, found in the periphery of each case's quintain, along with the findings arising from analysis of the interview transcripts and observational data were then examined, described, and are presented in Chapter 8. This process of developing cross-case meta-themes involves the interpretation of the quintain for each case separately and then extends to analysis of findings across the cases to make assertions about binding and comparative elements across hybrid learning environments in higher education health contexts, within the setting of this research.

4.3 Trustworthiness and Validity

The usefulness of research findings beyond the confines of the original study is of paramount importance. For the findings of a research project to be of use to the wider research, academic and public communities, it is essential to account

for the decisions made by the researcher to present accurate findings, demonstrate trustworthiness and strengthen validity (Creswell & Creswell, 2023). The authors note that it is important to distinguish between actions that are taken to ensure the accuracy and validity of quantitative research compared to the reliability of qualitative research vis the consistency of a research approach between a group of researchers or across research projects.

Decisions made when developing a research project, such as doctoral research, are underpinned by the philosophical position of the researcher, their ontology, epistemology and the subsequent research design decisions made which then inform the choice of methodology and methods. While a quantitative researcher is primarily wanting to ensure that research decisions and findings are objective, avoid bias, can be repeated and replicated in other contexts, key aspects to support validity of qualitative research findings take a different approach. Creswell and Creswell (2023) outline eight strategies that can enhance the accuracy and trustworthiness of qualitative research findings:

- *Triangulation* – this research incorporates data from multiple sources to build a comprehensive view on productive, hybrid learning environments.
- *Member checking* – during the data analysis phase, I gave some aspects of my analysis back to specific participants for review and comment.
- *Rich, thick description* – presentation of the case studies includes sufficient details to create a full and complex perspective.
- *Clarifying bias* – reflexivity acknowledging my insider position as a qualitative researcher with expert knowledge of HE health learning and teaching environments, and how this insider position is likely to influence my interpretations of the data, therefore necessitating ongoing self-reflection.
- *Presenting negative or discrepant information* – along with presentation of research findings that support themes I also include data and findings that may be contradictory, but that accurately reflect the cases, contexts, and experiences within each quintain.
- *Prolonged time in the field* – in addition to interviews and focus groups, I viewed course LMS resources before presentation, while embedded in,

and during live, synchronous teaching sessions. I took notes, zoomed in and out, and developed summaries based on my time in the teaching and learning spaces.

- *Peer debriefing* – throughout my doctoral research there was cyclical interactions with my supervisory team who reviewed and challenged my plans, processes and outcomes.
- *External auditor* – I have sequentially published findings from aspects of this research which have been peer reviewed and have presented this doctoral research for examination to gain objective assessments of validity.

These multiple strategies contribute to challenging, refining, and supporting the validity of this research.

4.3.1 Trustworthiness in Interview Analysis

Given the briefness of the interview period with participants in the case studies (40 – 60 min) and the potential for the researcher to make false inferences about the interviewee's experiences, attitudes, behaviour outside of the specific interview context, Maxwell (2002) cautions on the internal generalizability of interviews. Awareness of these potential limitations was important as I described, interpreted, and theorized on the participants' actions, responses and perspectives. (See Appendix 5 for interview schedule questions specific to various research participants).

4.3.2 Trustworthiness in Case Study Research

Thomas (2016) asserts that generalisation is not a feature of case study research. The study of a particular case, or cases, cannot be representative of a wider whole because it is describing a particular event/case, with specific details and circumstances relevant to that instance. This aligns with Stake (2006) who contends that “the power of the case study is its attention to the local situation, not in how it represents other cases in general” (p. 8). Indeed, thick descriptions of a case, in its local context create a broad, comprehensive picture allowing subsequent analysis to consider similarities and differences between the cases

without confining aspects to be replicable across contexts (Creswell & Creswell, 2023; Huberman & Miles, 2002).

Flyvbjerg (2011) proposes that the decision to use case studies as a method is determined by the issue being examined and the circumstances influencing it. According to Flyvbjerg a common misunderstanding in qualitative research is that “one cannot generalize on the basis of an individual case [and the belief that] therefore, the case study cannot contribute to scientific development” (p. 304). However, as the author notes the fact “that knowledge cannot be formally generalized does not mean that it cannot enter into the collective process of knowledge accumulation in a given field or in a society. Knowledge may be transferable even where it is not formally generalizable” (Flyvbjerg, 2011, p. 305). In consideration of these aspects, the findings of this doctoral research project are likely to be of most benefit to the participants working in higher education learning environments and to those working in contexts similar to the cases, however, emergent design strategies that prove beneficial to learning and learner activities have the potential to inform future learning design. Indeed, as Flyvbjerg (2011) contends, case studies have an important role in developing the corpus of knowledge.

4.3.3 Trustworthiness in Data Analysis

This thesis is grounded in a social constructivist paradigm with an interpretivist approach. Lincoln and Guba (1985) suggest criteria for establishing trustworthiness in data analysis include considerations about credibility, transferability, dependability, and confirmability of the study. Therefore, analysis of research data to ensure reliability and validity is essential so that research findings can be trusted and when appropriate, useful for other research and contexts. Nowell et al. (2017) argue that careful and detailed attention to these criteria provides a pragmatic process by which end users of research, stakeholders, researchers, and practitioners can understand and (re)use the findings and be assured of the research’s trustworthiness. Nowell et al. (2017) propose an enhancement of Braun and Clarke’s (2006) six phases of thematic analysis by incorporating Lincoln and Guba’s (1985) criteria for trustworthiness in each phase.

Braun and Clarke (2022) acknowledge the importance of reflexivity in thematic analysis in proposing the qualitative technique of reflexive thematic analysis (RTA). This aligns with what they refer to as Big Q qualitative research, whereby I use “qualitative tools and techniques within a qualitative paradigm” (p. 50). My interpretations of observations, interviews, course artefacts through the six phases of RTA are acknowledged as an important subjective resource essential for reflexive engagement.

The use of Miro boards through these phases provided a transparent, flexible use of deductive and inductive analysis. I initially began with the research questions and literature review themes as a reference point and then through subsequent RTA phases, was grounded in the data during familiarisation, progressing to naming and defining themes, and then returning to the original locations of interview data to confirm my interpretations in the context of the transcripts. This process of transversing data forwards and backwards has been described by Braun and Clark (2022) as essential movement along a continuum of analysis.

4.3.4 Trustworthiness in Findings

In reflexive thematic analysis meaning and knowledge are understood as situated and contextual, and the researcher subjectivity is conceptualised as a resource for knowledge production (Braun & Clarke, 2024). This inevitably sculpts the knowledge produced and is a vital rather than a threat to be managed. Braun and Clarke (2022) assert that quality requires immersion in the data, creative and thoughtful interpretations of data meaning and the application of researcher insight.

My doctoral supervisors have provided dialogic challenge throughout this research to enhance the trustworthiness of the findings. Additionally, my reflexive journal has captured my immediate thoughts and hunches during data gathering and has enabled ongoing reflection as I have proceeded through the data analysis phases. These practices enhance the quality of findings and are coherent with reflexive thematic analysis.

Richardson and St. Pierre (2005) note that gaining multiple views of reality supports the refractive process of crystallisation, and is likely to lead to complex, yet subjective, views of hybrid learning environments. The intended outcome of including varying strategies in this qualitative inquiry, such as triangulation of sources, within and across-case analysis, and thick description of findings is that altogether these have contributed to the rigor, validity, and trustworthiness of the research process (Stake, 2006). To ensure that each of these efforts contribute to valid and trustworthy research, it is imperative to conduct research that is ethically sound and to mitigate potential risks that may be present within the research process.

4.3.5 Clarifying Biases and Reflexivity

Cresswell and Poth (2018) acknowledge that research is value- and bias-laden and therefore, identifying the researcher's values and biases is essential. My biases are evident in relation to my role within the study context and my values influence my views due to my:

- significant long-term interest in hybrid and innovative learning.
- early adoption of technology to test out its usefulness in learning environments.
- view that experimentation with learning activities has the potential within health education to enhance competency in clinical settings, with the potential to, subsequently, improve patient outcomes.

As an interpretivist I have explored the interplay between learning design, the students, the academic staff and learning activities, to better understand the social and community phenomena that occurred. Alongside this, I acknowledge the subjectivity of this research as my values and morals have influenced the research process. Indeed, Creswell & Creswell (2023) identify key features of qualitative research are the interpretation of research data and identification of themes through acknowledgement of these personal lens filters.

As a qualitative researcher, multiple case study research afforded me the benefit of viewing these higher education hybrid learning environments from an insider perspective. Conducting qualitative research, being present within a

learning event and embedded as an insider, provided unique opportunities to collaborate with participants (Creswell & Poth, 2018; Denzin & Lincoln, 2018). However, being cognisant of evident (and prospective) challenges and mitigating their effects was an imperative. Indeed, Dwyer and Buckle (2018) reassert the thoroughly subjective nature of qualitative research and the importance of researchers occupying both insider and outsider spaces and acknowledging the importance of the space between these (Dwyer & Buckle, 2009).

My knowledge of these learning contexts might be considered a strength but can also be a challenge. The insider position can provide insights that may not be visible to an outsider but conversely, may create blind spots which could be obvious to an outsider (Denzin & Lincoln, 2018). These research theorists and experts note that reflexivity enables the researcher to review and acknowledge the influence of their role within an inquiry. Of specific concern within this research inquiry was the potential for positional power, coercion, and issues of compliance, and as such, it was essential for participants to have a sense of freedom to express their views with impunity. To address these potential issues the cases selected were ones in which I did not have any direct teaching nor access to grades, and participant involvement occurred by way of informed consent.

An ongoing researcher reflective journal provided an aide memoir for reviewing the research process and the noting of ponderings for subsequent consideration. These informed my data analysis, discussion of the research findings and supported my ongoing reflexivity on captured impressions, hunches, salient aspects and supported moments of curiosity. In this qualitative research, the centrality of my subjective analysis of a what is recorded, observed, and noted was a fundamental precept of reflexivity that enabled me to engage deeply and broadly with the data and subsequent analysis (Braun & Clarke, 2022).

4.4 Ethical Considerations

Given this research project's engagement with people in real contexts in real time, during academic teaching semesters in the period between 2021 and 2023, it was essential to ensure ethical practices guided the process (Carpenter, 2018). Ethics approval was gained from the higher education institution's Human Research Ethics committee prior to the commencement of data collection. Ref: NOR 20-61 (see Appendix 7). This approval included consideration of how te Tiriti o Waitangi (the Treaty of Waitangi) principles would influence the research and Māori; the benefits and risks to participants; the use of recordings and screenshots and the maintenance of privacy and confidentiality, consultation with cultural advisors and dissemination of research findings. During interactions, culturally appropriate practices such as the hui process, which imbues Te Ao Māori principles of interaction, supported the development of a culturally safe, interview space respecting and acknowledging the contribution of interview participants' expertise and mana (authority, status) to this research project. While the hui process provided a Māori-centred approach to the interviews, this culturally responsive, holistic approach can be appropriate to people of varying cultures.

When conducting research, it is imperative to ensure that all participants are able to provide informed consent and participate without coercion. In this doctoral research this involved providing information, including written, verbal and video, prior to any involvement in the research. Information provided to lecturers for the teaching session observation gave an explanation and rationale for use of the ACAD design for learning aspects that the study focused on (see Appendix 6). The participant information and consent form acknowledged that participants had the right to withdraw at any stage prior to the commencement of data analysis. The research information included a provision for the lecturer or the students to request the observation to stop if they felt uncomfortable and for it to resume at their discretion. This did not eventuate during research observations.

It was proposed that observations and focus groups were pre-empted by the researcher providing a short, in class, presentation on the research project and

inviting students within the course to participate in a focus group interview. However, due to two courses being delivered in the online environment and one course required to transition to online due to Covid-19 physical distancing requirements, I recorded a short video presentation of this research, and it was introduced to the course students by their course coordinators. Participants who subsequently indicated an interest to participate in this research were then provided with digital information on the research project and completed a consent form prior to interviews or focus groups. Informed consent was gained without coercion or pressure to join the study. Students were not approached individually to participate in focus groups. In acknowledgement of the participant's time for involvement, a \$20 supermarket voucher was provided.

The interview/focus group was recorded with their permission on the consent form. Confidentiality and anonymity of participants was ensured by adopting a nomenclature that identified their role and nominal order of enrolment in the research. Academic staff were identified as P1-19, and student participants as SP1-11. To ensure confidentiality I maintained secure, password protected access to the original audio recordings on a HE institution owned computer, with a backup copy stored on the institution's cloud server. A transcriber confidentiality agreement was completed for the transcription processing. Interview recordings and transcripts are to be destroyed at the completion of this research project. I observed the synchronous Zoom classroom video recording which was located within the institution's learning management system, by the course lecturer.

Anticipation of potential ethical issues combined with robust procedures to mitigating risk to research participant is a hallmark of excellent research. Ethical issues can arise at any point in a research project, and careful, thorough, prior consideration of these can ensure that the research findings are robust, and that all involved are afforded protection from potential and real risk resulting from participation.

4.5 Challenges

The arrival of the Covid-19 pandemic in March 2020 created challenges and opportunities for this research. Due to Covid-19 physical distancing restrictions, the interviews were planned to be either in-person, adhering to spacing requirements, or online using one of the available online meeting tools.

Interestingly, two years prior to the pandemic, in their review of the use of online platforms for research projects Grech and Cassar (2018) highlighted the imperative of considering the challenges of participant familiarity with the online tools in use for research, keeping participants engaged over the research period, providing a safe environment for interactions and the loss of observational aspects in comparison to a face-to-face research environment. These authors counter this potential challenge by highlighting the benefits of asynchronous participant engagement which allows for involvement that suits each participant's personal situation in terms of where, when and how they engage.

However, the interviews in this study took place after the initial Covid-19 experiences of lockdowns and physical proximity restrictions. This meant that participants experienced increased interactions using online meeting tools and demonstrated fluidity in their use. There were minimal disruptions to the interviews taking place, with one participant (SP4) joining a focus group from their car as this enabled them to be involved during a break in their workday, in a private location.

An overview showing the influence of Covid-19 on the higher education institution, healthcare, political and educational contexts is shown in Figure 4.5.

Figure 4.5

Covid-19 Overview

Context	2020	2021	2022	2023
Observations	-	CS3 (10-11/04) CS2 (07/09)	CS1 27/04)	-
Interviews/FGs	-	CS3 (02/03; 28/05; 25/06) CS2 (23/03; 28/05); 17/11	CS1 (27/04; 17/11; 13/12) CS2 (26/10; 07/11; 17/11; 25/11)	CS1 (20/01) CS2 (20/01)
COVID-19	NZ L4/L3/2 lockdowns (26/03-27/05) Auckland L3 lockdown (12/08)	Auckland L3/2/1 (12-22/02) Auckland L3/2/1 (28/02-12/03) WLG L2 Delta alert (June) NZ L4 (17/08-31/08) Auckland L3 (31/08-07/09) Auckland L4/3 (07/08-02/12)	Children Vax (17/01) NZ Omicron Red (23/01-13/04; 20K daily cases March) AKL Isolation 2/52 Restrictions lifted July	No physical distancing requirements, or mask requirements. Covid-19 restrictions; self-isolation if symptoms or positive test.
University	16/03 Clinical placement - no student may care for a person with COVID-19 Supplementary placements arranged. Extends Mid-Sem break, No teaching, Assessment date changes.	12/03 Timetable office changes to accommodate social distancing in rooms. 18/08 No students on placements, no exceptions.	Return to on-campus classes (masks, physical distance). Challenges of digital divide.	Students or staff who test positive Covid-19 isolate and study/work from home for 7-days. Household contact, Monitor symptoms and get tested.
Healthcare	21/02 1st COVID-19 case retrospectively identified 31/03 1st COVID-19 death 11/08 1st case comm trans in (102 days) 30/08 Face coverings mandatory 12+yr Changing policy & procedure guidelines through this year as more became known	1st COVID-19 Vax administered (20/02) 1st Delta MIQ case (28/02) District Healthboards stand down student clinical placements (17/08) Placements require students fully vaxed (15/09) Full vaccination 90% eligible popn. (20/12) 1st Omicron community case (29/12)	Boosters/masks required (03/02) RAT tests available (x/xx) Isolation requirements for self and contacts if text positive. Self-isolation only 7 days; RAT test contacts 5 days (17/10). Vaccine mandates ended 26/09	Aotearoa NZS Strategic Framework for Managing Covid-19 (Ministry of Health): Acknowledges managing rather than stopping the virus, variants and outbreaks may occur, access to antivirals.
Political	NZ Govt introduce 4 level alerts (21/03) State of emergency (25/03) NZ QR Tracer App (20/05)	Tight travel rule - 1st comm case since Nov 2020.	Anti-vax protest Parliamt (08/02 - 02/03) Major violent protests Traffic lights Red until July, Scrapped in October Vaccine mandates withdrawn.	PM J Ardern resigns (Jan) Change of govt (14/10/23) Covid-19 Public Health Response Act 2020 removed August 2023.
Educational	29/03 All education facilities close NCNZ approve; Year 3 Nsg - Telehealth clinical placements Staff learning on-the-fly (Zoom, Video recording...) 17/04 Virtual Happy Hours (SoN).	Work/study from home mandate (17/08) 27/08 student placements approved as essential workers; N95 masks mandatory; Hardship fund for learners (tertiary).	Schools can not deny enrolled students access to education on the basis of their vaccination status.	Lower domestic and international student enrolments. Hardship fund for learners ended. Performance-Based Research Fund (PBRF) delayed till 2026.

From <https://www.dpmc.govt.nz/files/default/files/2023-10/ncnz-significant-events-activities.pdf>

4.5.1. Co-writing of Publications with Supervisors and Research Participants

One of the challenges in this research was to make sure the analysis and interpretation reflected participants stances. As this is a thesis by publication, this consideration was particularly important during the writing of the book chapter titled Indigenous learning practices: Creating reflective spaces for growth and transformation (see Chapter 7). The chapter, co-authored with the participant teacher-designer, required extensive supervisory conversations on how to balance research integrity, the anonymity of the participant, while respecting and being culturally responsive to Māori practices and worldviews. Chapter 7 describes a case embedded in te ao Māori (Māori worldview) and mātauranga (Māori knowledge) that reflects the design expertise of the lecturer involved. My position as Tangata Tiriti, (person of the Treaty) meant that my understanding of what occurred was filtered through this lens and I had to carefully consider and check whether I was representing an authentic experience and culturally honouring the essence of these learning events in my analysis. To ensure that my interpretation of observations accurately reflected and honoured indigenous practice, I gained permission from the participant who enthusiastically and willingly undertook regular member checks as Tangata Whenua (person of the Treaty) and also with a cultural advisor, throughout the writing process.

This research has been undertaken in a part-time capacity as part of an academic, full-time role and as such managing competing requirements of both commitments has been challenging. However, the opportunity to arrange interviews and observations with people at a time and place that suited them, along with time to sit with the data and write publications over my enrolment period (six years) has been advantageous. This time period has given me the opportunity to observe, study and reflect on the changing landscape in higher education health education contexts through the pandemic and beyond.

4.6 Summary of Chapter

This chapter has discussed the epistemology, research design and approach in this research. A case has been made for aligning this research with multiple case study methodology (Stake, 2006) and the justification of research methods, data analysis processes, including ethical considerations, role of insider research in this qualitative research, and the challenges encountered.

This chapter has outlined the methodological approach and methods used to explore productive, hybrid learning environments in higher education health contexts. By aligning with multiple case study methodology (Stake, 2006), the research uses qualitative methods, including observations, interviews, and focus groups, to collect contextual data from three undergraduate health education courses. Alongside the Activity-Centred Analysis and Design (ACAD) framework, reflexive thematic analysis was used to guide the systematic and iterative analysis of data.

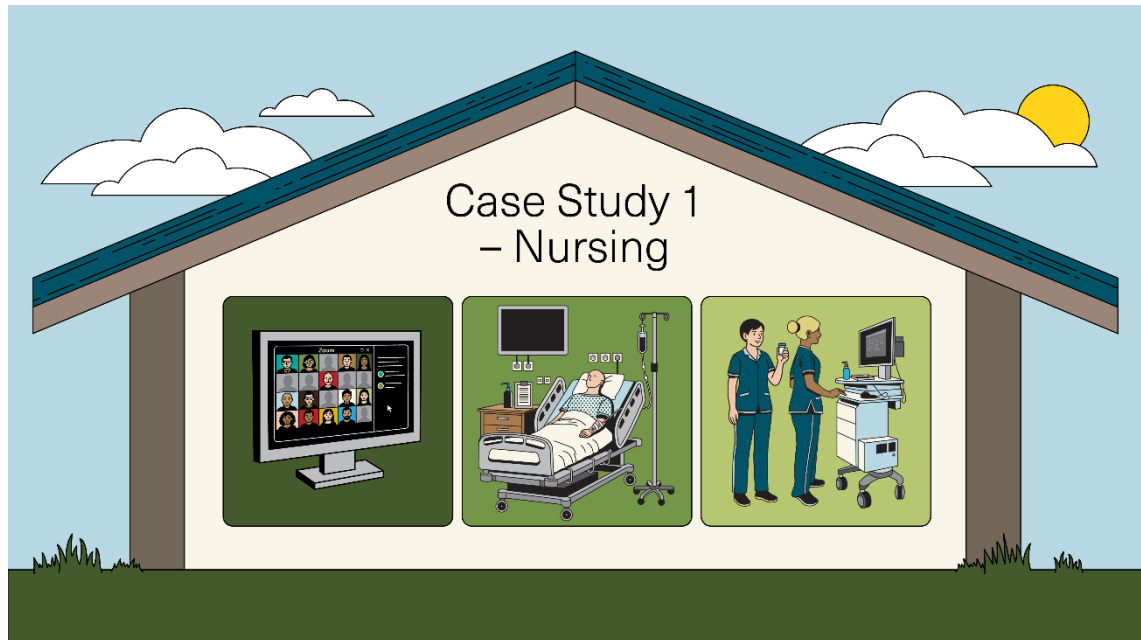
The concept of the quintain, central to Stake's methodology, provides a cohesive structure for examining the shared and unique characteristics of the cases, enabling a cross-case analysis that maintains the integrity of each individual case while addressing the overarching research objectives.

Reflexivity and strategies to enhance trustworthiness and validity were integral to the research process, ensuring the credibility of the methodological approach. Ethical considerations, including cultural responsiveness were carefully addressed to ensure the study adhered to rigorous and respectful research practices.

Together, these methodological elements form a robust and coherent framework that ensures the research process is systematic, culturally responsive, and aligned with the overarching objectives of exploring hybrid learning environments in higher education health contexts.

The following chapters present and discuss the case studies in this research.

Chapter 5. Case Study 1: Rich Realistic Clinical Learning



5.1 Introduction

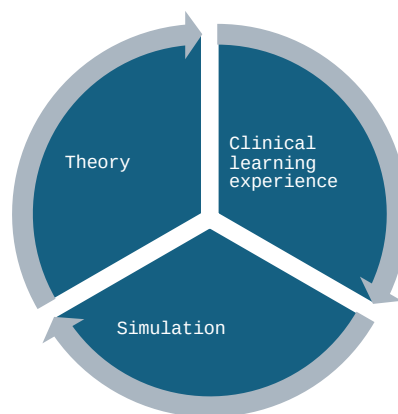
To successfully work in the health profession students need to learn how to navigate the complexities of providing acute care in real-life clinical settings. This case study focuses on productive, hybrid learning environments for the enactment of rich and realistic clinical learning. The case explores the design of a course with 152 year-3 nursing students, who are spread geographically across three locations. The case also includes a discussion about the need for teachers to re-design elements of a course after a major unexpected event. At the time of data collection and for the duration of the semester, Covid-19 pandemic restrictions resulted in most of the teaching and learning content pivoted online via the LMS with asynchronous interactions, or synchronously in Zoom sessions that were also recorded for those unable to attend. The analysis of this case study explores key elements in clinical education through observations and interviews with students, lecturers, and associated academic staff. A discussion records participants experiences of the course at a particular time when adaptations to existing design, alongside wellbeing, emotional and

economic concerns were intrinsic to the learning activity that unfolded during the pandemic.

The original course design facilitated students' engagement on campus with theoretical and lab content taught over a 3-week period followed by 6-weeks of clinical learning experience in health organisations occurring before they returned to the university campus for another 3-weeks of theory and labs, that included a focus on simulation of patient deterioration. This high fidelity simulation experience was especially important because it integrated course content and provided an opportunity to review knowledge and skills in preparation for a further 3-week clinical learning experience (see Figure 5.1). The course organisational structure in this case functioned in rounds of theory-clinical learning experience-simulation for the duration of the semester and finishing after the final clinical learning experience.

Figure 5.1

Cyclical Organisation of Learning



Drawing on interviews with lecturers (Green, 2022, Appendix 11), the ACAD framework and the Aotearoa Design for Learning framework domains, this chapter introduces key elements of the course design. I observed a group of 10 students and two teachers and analysed the simulation session in detail. Participant perspectives were analysed, and key themes were generated. The chapter summary highlights the synthesis of key design elements and emerging issues represented in the Case Study 1 Quintain.

5.2 Researcher Presence in this Case Study

In Case Study 1 – Nursing, I was an observer within the simulation setting, physically positioning myself on the fringe of the simulation space, near the outer edge of the two rooms that were used on the day. I was aware that simulation can cause some students to have performative anxiety (García-Fernández et al., 2025) and I did not want to contribute to this. As the scenario unfolded, the student participants appeared to become absorbed in what was happening with the patient's unfolding health status and did not engage with me. It seemed my presence was not influencing their actions and reactions to the simulation.

After my observations of the teaching session, I completed my record of events in the observational protocol focusing on details (see Appendix 8). The teaching team reviewed and edited the record and offered their insights to make sure that I had accurately captured the details and intent of the session's design for learning. This process contributed to the trustworthiness and validity of my observational assertions.

During data analysis I followed the reflexive thematic analysis process (see Chapter 4. 2.5) proposed by Braun and Clarke (2022). This included familiarisation with the data, initial code generation, theme construction, theme development, theme naming and defining and writing up. I had ongoing discussions with my supervisors (LC, NB) to review and refine codes and themes to support the reflexivity, trustworthiness and the validity of the thematic analysis.

5.3 ACAD: Framing Course Design Elements

Multiple elements are part of the course design. These include epistemic elements that have previously been described, such as theory and practical content specific to clinical settings (*Epistemic design*). Learning activity might occur in different learning settings. including online via LMS or on Zoom, during clinical learning experiences or in a simulation lab (*Set design*). Students might also engage in other informal learning settings (e.g., cafes, library, home, etc). In addition, there are various social arrangements, where students might be

asked to work individually, in small groups or as a whole cohort (*Social design*) (Table 5.1).

Table 5.1

ACAD Elements

Epistemic	Set	Social
6-weeks theory	LMS (video, PDFs, H5P)	Whole cohort
Zoom lectures, SDL	Zoom tutorials (cameras, laptops)	Campus cohort
Lab content SDL	Simulation lab - charts, vital signs monitoring and equipment, white board	Lab groups (10 -15)
2-hour simulation	Clinical learning experience (Work-integrated learning)	Individual
9-weeks clinical learning experience		Peer support
		Tutor support
		Clinical tutor support
		Clinical mentor

In addition to the ACAD elements within the case, details aligning with the Aotearoa Design for Learning framework domains incorporating a cultural frame of reference were evident (Table 5.2).

Table 5.2

Aotearoa Design for Learning (AD4L) Framework Domains and Evidence

Taha Wairua <i>Beliefs about learning essentials</i>	Taha Whānau <i>Relationships to assist learning</i>	Taha Tinana <i>Setting psychosomatic influences</i>	Taha Hinengaro <i>Cognitive process changes</i>
Identifying key learning expectations	Observing others supported own engagement	Feeling comfortable collaborating	Prior experience enabled effective practice
Communicating learning design supports effective teaching and learning	Teachers assessing distress and supporting students	Normalising anxiety in challenge	Recognition of patient deterioration irrespective of cause.
Fundamentals of care	Pairing similar students together	Recognition of underlying anxiety	Questioning prompts critical thinking and clinical decision making

Four hours of observation surrounding a simulation session where the students interacted with a 'patient' manikin informed a critical part of the data that was gathered and analysed. Although prior clinical learning experiences may not have provided an opportunity for all students to manage a patient's deteriorating condition, during the simulation they can apply their knowledge and collaborate with each other. By sharing knowledge of common body system assessments, expected assessment parameters, and the fundamentals of patient care, students have an opportunity to collaborate about nursing care over the duration of the scenario with guidance from the teacher.

The simulation space in resembling a realistic setting, such as a clinical ward, assists students to become familiar with common nursing settings. The set up in this case includes a high-fidelity manikin in a post operative ward bed space (*Set design*).

Figure 5.2

Nursing Simulation Bed Space with Manikin



For the simulation session, the teacher sets up a space with expected hospital furniture, monitoring equipment (e.g., blood pressure cuff, sphygmomanometer, thermometer, stethoscope, hand hygiene, sharps container, chest drain, IV fluid pump), and documentation typical of clinical environments (e.g. vital signs charts with early warning score (EWS) processes, medication chart, fluid

balance chart) (see Figure 5.2 and 5.3). Electronic monitoring displays the recording of a patient's deteriorating vital signs during the simulation scenario (*Set design*).

Initially, the teacher gives a 10-minute briefing to orientate the group of students to the patient scenario (*Epistemic design*). In this case, post-operative trauma patient Rose, has had a chest drain inserted to treat a collapsed left lung and has rib fractures after a mountain biking accident. Students are briefed on the bedspace equipment and documentation. The teacher provides a patient handover (ISBAR format²) typical of those given in clinical environments when a patient's care is passed on another healthcare professional (*Epistemic design*). Students sit in a semi-circle away from the bed space to observe the simulation while taking turns, in pairs (*Social design*), to come into the bedspace area (*Set design*) and assume the role of year-3 nursing student assigned to care for Rose (*Social design*). There are five phases of care occurring over a 30-minute period, during which the patient's condition deteriorates and results in a Medical Emergency Team (MET) call for assistance in the final phase (*Epistemic design*).

The simulation is followed up with a 60-minute reflective debrief using the 'Debrief for Meaningful Learning' (Dreifuerst, 2015) process worksheet and leads to the group developing a whiteboard summary of the patient's care (*Epistemic design*). The teacher (P9) notes they ignored planned lesson timing and "aimed for a 45-minute scenario leaving us a solid hour to debrief". This revision emphasises the importance of the debrief for post-scenario learning.

5.4 An Evolving Learning Design

As mentioned above, the observation took place at a particular time when there was a requirement to move delivery of content to an online format because of Covid-19 lockdown restrictions and the need for physical distance from another person in the classroom on-campus. To minimize time students and lecturers were collocated in a physical space, some learning resources and lectures were

² ISBAR – Identify; Situation; Background; Assessments; Recommendation (Haddeland et al., 2022)

shared online and via Zoom sessions prior to students' engagement in the simulation lab. PowerPoint presentations, with the teachers speaking to the slides, accompanied by a topic workbook were available in the LMS prior to the synchronous Zoom session. This session was recorded and available to students on the LMS.

Due to changing Covid-19 levels and regional lockdowns, there was uncertainty about whether to bring students onto campuses for in-person simulation labs. Three weeks prior to the scheduled on-campus simulation, teachers were still considering alternative plans in case the lab lesson needed to be delivered online. They contemplated the potential of repeating the setup used with a year 1 course, in the previous year, when teachers enacted the simulation roles in a campus lab and were observed by students via live stream webcams in a synchronous, Zoom session.

However, revised Covid-19 restrictions and lifting of university mandated physical distancing requirements, combined with the imperative to 'see' students' interactions with each other within this scenario lab, enabled this on-campus session to proceed. The 2-hour 'acute, post-operative, deteriorating patient' simulation occurred late in the semester after the initial block of theory and clinical learning experience and immediately prior to the final 3-week clinical learning experience.

Figure 5.3

Scenario Room Setup



The students worked in pairs through each phase of the scenario (*Social design*) responding to the handover given by the teacher and assessing the patient's condition using known body system assessments, the equipment provided, and documenting their findings. Some pairs worked independent of each other, while other pairs worked collaboratively with one student focusing on assessing the patient and the other documenting findings and providing feedback based on their clinical judgement of the patient's condition. Initially, pairs talked quietly together and at times moved inefficiently between the patient and the documentation table (*Taha Tinana*). However, as the scenario developed and students became aware of expected simulation actions, there was increased fluidity and coordination in their actions and reactions to patient assessment and deterioration (*Taha Whānau*). Pair three examined the patient and assessed a dressing on a leg wound. They also identified an issue with the chest drain and whispered to each other [*inaudible*]. The teacher intervened to prompt them, asking if they wanted to 'phone a friend?' [*i.e. tap into the knowledge of their observing peers*]. A peer suggested they check if the Early Warning Score (EWS) was increasing [*a sign of patient deterioration*], which

resulted in them following the EWS escalation protocol and calling the medical house officer.

When it appeared that a pair were 'stuck', the teacher asked the students a question to prompt their thinking. For example,

What is the early warning score? [*an indicator of deterioration*].
Are you happy with that score? (P10)

I might talk them through the ABC [*Airway, Breathing, Circulation*], trying to orientate them to what they've done well and where to go next, or to direct them. (P9)

The patient in this scenario had rib fractures and a chest drain. As such, a respiratory assessment and the use of a stethoscope to listen to breaths sounds was an expected action (*Taha Wairua*). However, at this stage of the simulation, although student pairs recorded vital signs that indicated declining respiratory status and noted deterioration on the EWS chart, none of the initial pairs conducted a respiratory assessment. The fourth pairing included a student who had been in an intensive care unit (ICU) for a prior clinical learning experience and asked the patient questions to increase their understanding of her current condition. In this instance, the teacher provided the 'voice' of Rose (*Epistemic design*). The student picked up the stethoscope and listened to the patient's breath sounds, identifying reduced sounds in the left lung indicating patient deterioration (*Epistemic design*). The student pair discussed the findings with each other, and the student documenting vital signs identified the EWS was 9 indicating the need to call the Registrar [*a senior doctor*] (*Emergent / Co-creative activity*). This student's prior experience in the ICU guided their actions to conduct previously learnt and practiced body system assessments. Noticing reduced breath sounds, the lack of movement in the chest drain, and the patient's increasing EWS score led them to escalate their concerns (*Taha Hinengaro*).

Rarely does a nurse work in isolation in a post-operative, patient care situation. In this simulation listening to the patient's perspective is key to working collaboratively to enable escalation of care to other healthcare professionals as the scenario progresses.

Most students haven't actually thought about interventions they can do or how long is too long to wait for the doc [*doctor*]. (P9)

This scenario supports students to develop skills in dealing with socialised medical hierarchies within acute settings that they will likely experience (i.e. hospital over-capacity, delays in consultations), 'keeping it real' (P10).

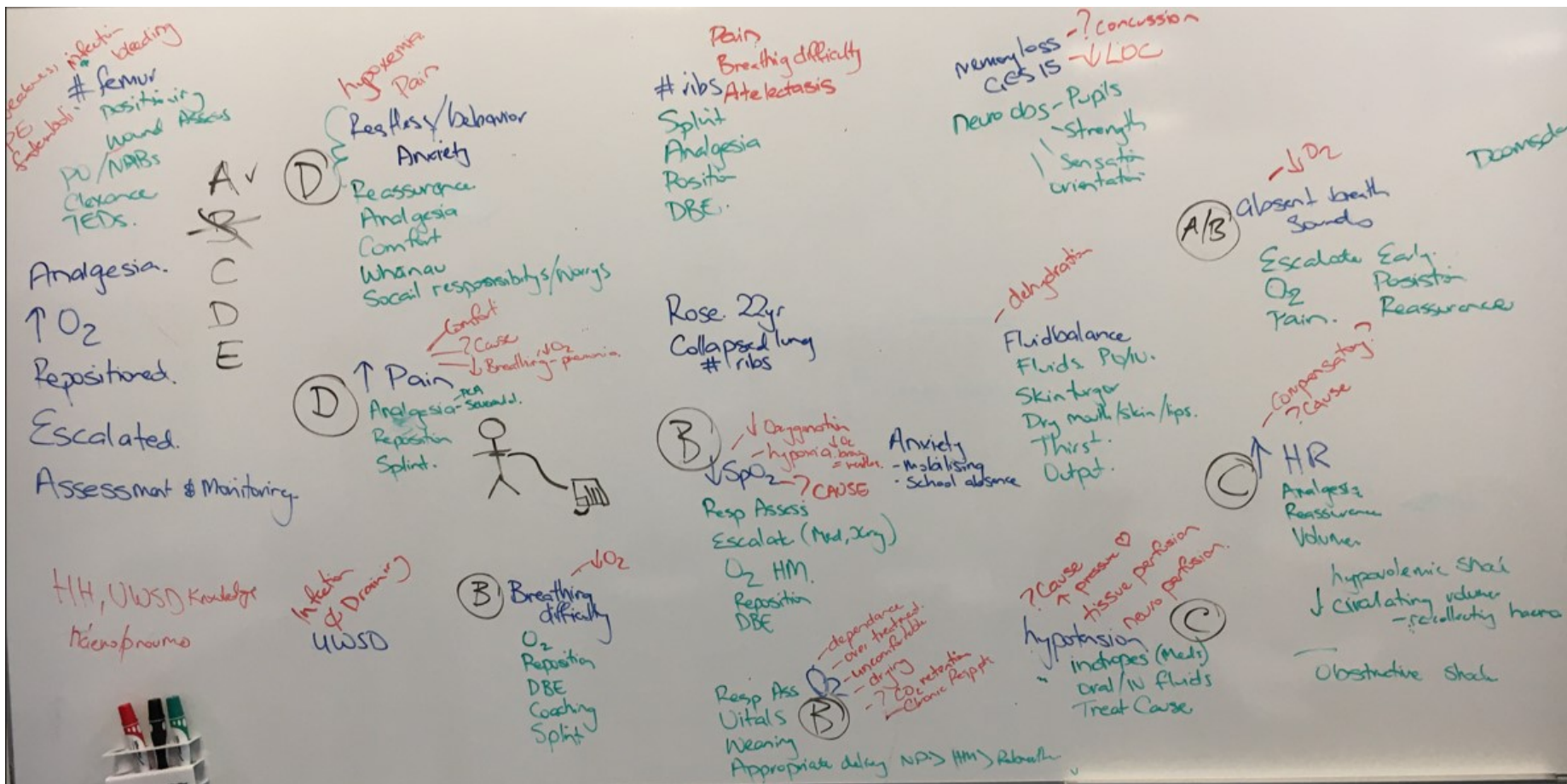
After the five phases of the scenario were completed, the 10 students moved to a workshop room with a large whiteboard (*Set design*). The teacher facilitated a reflective debriefing session using Dreifuerst's (2015) 'Debriefing for meaningful learning' worksheets focused on their experiences within the simulation (*Emergent / Co-creative activity*). As the student reflected and wrote down their experiences they were guided to consider:

What is the first thing that comes to mind about this simulation experience? What went right and why? What would you do differently and why? What do you think is going on for Rose?

This process of reflection, followed by teacher-facilitated group feedback and discussion appeared to allay potential performance anxiety instead normalising moments of uncertainty and recognising effective actions (*Taha Tinana*). As the discussion proceeded with a growing level of engagement and collaboration, the teacher documented the patient care scenario on a whiteboard (Figure 5.4) while students drew on the knowledge and skills they had developed in the Bachelor of Nursing programme (*Emergent / Co-creative activity*).

Figure 5.4

Whiteboard Debrief Summary



Key: Blue = Key presenting issue; Red = Risk; Green = Nursing intervention; Black = ABCDE clinical assessment framework

The students and teacher explored the scenario, using various coloured markers to distinguish between aspects of care e.g., blue pen for key problems/issues the patient presented with, red pen to identify risks, green pen to identify nursing interventions for each problem/issue and ongoing assessments to track improvement or deterioration (*Set design*). Mapping these elements linked to a well-known clinical assessment format discussed in the previous day's Zoom Lecture – ABCDE (Airway, Breathing, Circulation, Disability, Exposure/Escalation – black pen) assisted students to restructure their approach to the nursing management of a deteriorating patient in the future, irrespective of the basis for the deterioration (*Emergent / Co-creative activity / Taha Hinengaro*).

5.5 Case Analysis and Discussion – Academic Staff

I interviewed six academic staff including the course teacher-designer (P5), simulation teaching staff (P9 and 10) and associated academic staff (P12, P14, and P17) to gather their views about the course design and their perspectives on productive, hybrid learning environments. Key emerging themes in the context of rich realistic clinical learning included issues associated with supporting and challenging students; designing learning activities that support a teaching team while maintaining continuity of teaching across campuses; incorporating current research to develop authentic learning environments, and the importance of identifying indicators of student learning. First, building on findings from the systematic literature review, the theme of supporting and providing learning challenges is explored.

5.5.1 Supporting and Challenging Students

Teachers within this course noted the importance of establishing emotionally safe learning environments in which students can experience positive challenges and experience support as they collaborate with each other (*Epistemic and Social design*). Feeling safe becomes especially important as many students may arrive at a session with underlying anxiety or feel stressed (*Taha Tinana*).

I have noticed most strongly over recent years is the increase in things like anxiety... and depression. I've been in tertiary education for a very long time now and it's worrying how many students will disclose about anxiety... it's very noticeable that difference... that's happened over the years... it certainly feels much more prevalent in our student population... I've certainly noticed financial stress on them too, which puts a big burden... I think they're time poor, because so many of them are working as well. (P14)

Given that a simulation session may provide a positive challenge for some students while conversely creating distress for others, teaching staff must assess and respond to individual student needs in the simulation moment (*Social design / Taha Whānau*). A simulation session provides students with repeated opportunities to observe and practice specific knowledge and skill actions (*Epistemic, Set and Social design*) and can contribute to future safe patient care (Shorey et al., 2018). Such repetition enables students to apply their developing skills in a practice setting (*Emergent / Co-creative activity*), co-configuration before applying them 'live' on real patients in clinical environments, and, in this case study, to bring skills from their prior clinical contexts, and apply them in a complex, patient scenario (*Emergent / Co-creative activity*). One of the teachers in this case study identified these simulation principles:

It's a safe place. You would never want them to go out into clinical and have to do a patient assessment for the first time, like that, without actually going, 'stop, this is what you need to be doing' and then working through that whole cycle of learning for the students. (P5)

In considering individual student's challenges within a safe learning environment, P9 notes,

I try to keep it safe, I know especially with those third years, you don't pair up an introvert and an extrovert. Or, have a super dominant pair after a quiet pairing. So that the student feels okay within the simulation (*Social design / Taha Whānau*).

The teacher (P9) in the observation had previously discussed the use of question prompts to challenge students' thinking and clinical decision-making.

“Okay, you’ve done well. Where do you want to go next?... So what are you looking for with the chest drain?” “What do you want to do? Do you want to call someone?” “Okay, what are you thinking?” (*Epistemic design / Taha Hinengaro*)

Supporting students is a complex endeavour with teachers being mindful of responding flexibly to actions in the simulation scenario. The teacher noted that,

at this point, most of the other lab groups ‘were flapping! So, I threw lifelines I threw lifelines to most groups after they had done a set of obs [*recording of vital signs: pulse, blood pressure, temperature, oxygen saturation, pain*]. What are you going to do while you wait for the registrar [*doctor*] to turn up? Can you push the emergency bell? (P9) (*Epistemic design / Taha Hinengaro*)

The teachers in this course referred to these types of prompts and interactions between the teacher and students, as contributing to students feeling challenged, supported and stretched in their learning (*Taha Hinengaro*).

5.5.2 Designing for Teamwork and Maintaining Continuity

A second theme identified from interviews with teaching staff related to the importance of teamwork within the teaching team. When there is a range of staff teaching the same topic or session, what occurs within the session will differ due to the teacher’s knowledge, skills, experiences and confidence (INACSL Standards Committee et al., 2021), combined with the students’ actions, reactions and contribution to the knowledge of others. As teaching staff interpret the learning outcomes and session plan there can be varying understanding of core content, resulting in inconsistency of delivery and of student experiences.

Such heterogeneity is inherent to design for learning; it relates to how teaching and learning activity unfolds as an Emergent and Co-creative activity in learning environments. This was evident as P5 recalled a previous year’s course in which they observed colleagues facilitating a repeated simulation and debriefing session with students. P5, an experienced simulation facilitator, had conducted the first simulation and debrief. Subsequent simulations were run by a clinical expert who was not proficient with the simulation pedagogy and was unfamiliar with the importance of specific design elements within the simulation. This led to the realisation for P5 that there was often insufficient time for professional

development to adequately prepare teaching staff to facilitate simulation sessions effectively.

When you get some person who's new, or filling in for you, to do the simulation, depending on the education that person has had around how to do the simulation, the students could have a completely different experience. (P5)

In talking about the simulation session, P9 noted that across the campus sites, two of the staff have never done this before, two others have minimal experience. Communicating learning design decisions to new staff or those unfamiliar with learning activities supports teaching teams to be effective, maintains course continuity, and ensures design intent is retained (*Taha Wairua*).

It's so worth investing time into getting these new staff engaged... in the big picture stuff, the stuff that actually is the pillars of the learning and teaching design in this programme. If people don't understand, then there's risk that would be something that puts an excellent design in the [names degree programme] under threat. (P17)

Involvement of teaching staff who are unfamiliar with rationales for inclusion or exclusion of topics and content within a course heightens the risk of content overload or "content creep". This phenomenon occurs when additional content is included, or conversely perceived unnecessary content is removed, without acknowledgement of the original intent of design for learning. Despite well-meaning intentions, changes to course content can result in a loss of focus. incoherence in course content and design for instruction rather than design for learning (Barr & Tagg, 1995).

The observed simulation activity played a pivotal role in this course, drawing multiple threads of prior learning and clinical learning experiences together, making it imperative that new staff understand their role in the overall course design. To enhance consistency across the campuses delivering this course, a briefing meeting was organised by P5 to prepare staff on simulation content, the underlying philosophy, the plan, the phases, the 'debriefing for meaningful learning' process, and the learning outcomes. As P9 remarks:

I've never done it like this; we're complete novices to this.... If you're not mentored into a new way of doing things, you go, "Okay, this is what I've got. How does it make sense in my brain and my way of operating as a teacher. So how can I mobilise this?" (P9)

The evolving learning design in response to Covid-19 variations in lockdown restrictions meant the simulation session I observed was also the very first time in the semester that these students and teachers were together in an on-campus teaching space.

P9 considered the semester's course had "lost a significant amount of facilitator teaching time", with fewer opportunities for lecturers to be collocated in the same learning space as their students and to see students around a lab bedspace. They compared previous on-campus sessions with current experiences:

standing students around a group and directing them and just steering their ship when they get a little bit wonky. That's lost... I'm blind, I don't even know if they're doing it together! They are probably all doing it as individuals [*speaking of the course's asynchronous, online learning activities*]. (P9)

This teacher expressed concern that due to the students being taught remotely in an online format, the students' knowledge and ability to work in a team environment was an unknown factor. In discussing the productive, hybrid learning opportunities associated with rich, real-life, clinical learning settings, teachers also recognised providing continuity and supporting teamwork was challenging in the era of Covid-19 changing circumstances (*Taha Hinengaro*).

5.5.3 Bringing Research into Authentic Learning Spaces

P5 identified the satisfaction of bringing research insights into teaching practice. After becoming aware of a nursing care framework that would translate well into the course, they described how it informed learning design elements and introduced fundamental considerations in nursing care.

When I was in my discussion of my PhD, I came across that Fundamentals of Care framework. Which is a really good way to think about how you look after patients, and I can see how that Fundamentals of Care can really frame undergraduate nursing.

Because it doesn't matter where you are, if you don't do the fundamentals of care then you're actually missing some components of nursing. (P5) (*Taha Wairua*)

This framework (Kitson, 2018) is now introduced to year one nursing students and P5 noted it was incorporated into year three course introduction week and was evident in the student interactions with 'Rose' in the fourth pairing.

Additionally, this course incorporates resources used in clinical practice, such as the Early Warning Score documentation, which research has indicated can significantly improve the outcomes for patients who are at risk of deterioration (Nadaf et al., 2025).

You'd hope that they'd know that whatever they learned is applicable to their professional ... So, it's not just theoretical, but it is backed up by evidence, evidence based. (P12)

This simulation is clearly focused on applying learning to prepare students for graduate professional practice.

5.5.4 Student Activity and Indicators of Learning

An important aspect of the ACAD framework is the acknowledgement of both designable (*Epistemic, Set and Social*) and non-designable (*Emergent / Co-creative activity*) elements that contribute to co-creation of knowledge (Goodyear & Carvalho, 2014; Goodyear & Dimitriadis, 2013). In gathering teacher perspectives on student knowledge co-creation, P5 noted personal elation when indicators of learning were evidenced.

Every year it's amazing the stuff they come up with. It's really cool. So, that's the beginning of informing it, and then looking at how the Fundamentals of Care can inform their practice for working with people with an acute illness. (P5)

During the simulation observation, the teacher (P9) used a large whiteboard to collate feedback from the group discussion (see Figure 5.4). She was interested in the students' perspectives regarding: the main health issue; why it was an issue and the related risks this presented for the patient; consideration of how this might affect other body systems; and the corresponding appropriate nursing interventions. For each issue identified by the students, the teacher led them

through a series of clinical reasoning cycles as they considered pertinent information to guide nursing care. P9 commented on specific strategies used to scaffold learning, such as mapping the information:

we put it all back together in the ABCD order to help them restructure their approach to a deteriorating patient in future. I love the mind-mapping of this, and we could have gone that way, or that way or that way! (P9)

This flexibility is indicative of the emergent nature of design for learning in which the teacher can nudge learners into hoped-for knowledge application, but the final outcome is dependent on the learners and their synthesis of the learning activity.

The teachers' perspectives in this case study have highlighted the importance of careful design for learning to challenge students while supporting them through periods of knowledge and skill growth. Additionally, to maintain the integrity of the simulation pedagogy, the inclusion of professional development for new staff enabled effective facilitation of this learning activity. From the observation of this teaching event, the underlying foundation of 'Fundamentals of Care' research was evident in the co-creative whiteboard activity that brought together the foundations of care and assessment of vital signs into a cohesive and replicable approach for students to manage patient deterioration. In the next section, I explore the emerging themes from interviews with students in this course.

5.6 Case Analysis and Discussion - Students

The lifting of some Covid-19 lockdown restrictions allowed me to conduct a focus group interview with four students (SP8 – SP11) who participated in the patient deterioration simulation. One other student SP12 was unable to join the group and chose an individual interview on Zoom. These interviews occurred straight after the observed simulation activity (focus group, SP 8-11) and two-weeks later (individual interview SP12). Gathering students' perspective helped me to gain a more nuanced understanding of how the intended design intentions were perceived by students, what they valued, and how they

experienced this hybrid learning environment. There were six key emerging themes including awareness of extended boundaries in learning; students valuing agency and autonomy as they engaged with course content; recognition of purposeful course structure and the benefit of teachers curating content; disrupted connections with peers and teachers; the power of rich, realistic teaching and learning environments on preparation for graduate practice and the importance of learning challenges to equip students for clinical practice and professional careers.

5.6.1 Becoming Aware of Extended Boundaries in Learning

The interview data indicated students had a growing awareness of course related learning occurring not only within a teaching session but also happening in the pre-task activities and interactions with resources. They identified these items as useful in preparation for meaningful class activity and for later review and use in their professional practice. These students valued the types of resources offered and the flexibility in having access to these resources at different points in time. The presence of varying types of resources and opportunities for interactions with course content, as well as flexibility of access, all contribute to establishing a learning environment that supports student learning.

The student interviews revealed the importance of priming the brain for learning. Students highlighted the need to read through or complete pre-learning tasks prior to a class session so that when they attended teacher-led sessions, the content would build on their initial understandings.

...going through the lectures before they talk it through in class...
So, you know what's before class learning like your readings...
helps when you go into the lecture where you've got some of that
knowledge. And you're like starting to connect the dots. (SP9)

SP12 highlighted the importance of interactive, pre-learning activities by making the distinction between “actually engaged in the content, rather than just going through it”.

There are short clips, they might explain a topic or talk about the patient that you're working on, that part of the content. And then

it will go on to ask questions... There's like little bits of sound throughout the workbook...I think when I just have to read something it doesn't really sink in for me because, I'm not sure. It's not that I'm not focused on it, but, it's just harder to focus. Whereas if it's someone talking to you you're actually listening to what they're saying, rather than just reading through and not actually paying attention. (SP12)

For SP11, there were practical implications for planning out their week and blocking times for specific activities such as pre-learning, reviewing notes after classes, which enabled them to also maintain income-generating work.

I tend to aim to do all of my pre-learning the day before the class...then after class I'll go back, and I'll fill in kind of everything else that I didn't do... probably a couple of hours each day on each course... Monday to Friday is my set kinda study days because I do work part time. So, I also have to factor in that. That's a big part of it as well. (SP11)

These remarks show students engaging in a deliberate and organised way with the materials teachers have provided to prepare for and support their learning.

5.6.2 Students Value Agency and Autonomy

This theme revolves around students' experiences of learning tasks that seemed designed to include a variety of both andragogical (Knowles et al., 2020) and heutagogical principles (Blaschke et al., 2021). Such learning tasks offer adult learners opportunities to exercise their agency and autonomy to organise and manage their engagement with courses, resources and the completion requirements of assessments. In this case study, this manifested through the design of tasks encouraging students to organise personal study schedules, eventually translating into their appreciation of the unforeseen benefits,

...it's made me a bit more focused because in a group setting, I do get quite distracted... There's no kind of going off and chatting to someone so I'm actually paying a lot more attention than I would maybe in a group setting... I feel like I've actually learnt quite a lot more than I would have otherwise. (SP12)

Other participants highlighted the challenges in adjusting to increased heutagogical agency, which is characterised by their ability to manage their own learning:

I think a lot of it is trial and error to see what works for you... There was the expectation that you have to be constantly studying. But it really depends on how you manage your time and if you can manage it wisely and get everything done that you need to get done then there's all this time that you have left over that you can use to do whatever you need to do. (SP11)

Developing agency was reported by SP10 as a work in progress and not something that came naturally to all students.

... a lot of the times I go down like a spiral, because once I start on something I can't stop until it's finished... It's like never ending... Once you start with something and then it leads to something else, and then it's like oh I don't know this, and it doesn't stop. But it's okay. (SP10)

It is important to notice that effectively managing course work requirements, family/whānau commitments and personal wellbeing, appeared to elicit diverse experiences from students. This might have been specially challenging in a period marked by health and economic concerns.

Nevertheless, throughout the interviews with student participants, it was apparent they valued autonomy and agency, and their views and experiences of the courses seem to align with learning environments designed with the principles of andragogy (Knowles et al., 2020) and of heutagogy (Blaschke et al., 2021).

5.6.3 Purposeful Structure and Curated Content

Reconfiguring design for learning within hybrid learning environments requires careful consideration of how students might practically apply the knowledge and skills they are learning. Due to the emergency and evolving nature of the Covid-19 pandemic, initially, lecture content within a Zoom classroom was often identical to that given in a physical lecture room, with minimal consideration given to how it might be modified to be more engaging or interactive for online delivery. Student participants talked about how they felt regarding the lecturer's preparation of course content for rapid, emergency transition to fully online delivery in response to Covid-19 restrictions (Green et al., 2020), comparing the initial pivot to online with the subsequent year of delivery.

I've found that this year hasn't been as bad. A lot easier to manage than it was in the first place and I think that is more about the lecturers having a bit more knowledge about how to structure an online course kind of thing...It's a lot less about just putting everything online and it's more about making content that is interactive...Whereas, ... when it first went online it was more about putting the lectures online. It wasn't about... tailoring it to being online. The learning is a lot different when you have to do it online, it's better as in-person. So just putting everything that was to be in-person online isn't going to work. (SP12)

Having those Zoom meetings and the classes online, they're good but maybe some content that's a bit more interactive. That actually gets us thinking a bit more than just sitting there in class taking notes and just listening. (SP11)

These responses indicate the students' awareness of the need for purposeful structuring of course websites and resources to facilitate effective teaching and learning. They recognised and appreciated the move towards interactive learning and staff identifying what would work best in different learning environments.

5.6.4 Disrupted Connections with Peers and Lecturers

Student interviews identified feelings of disruption associated with the pandemic, such as the perception of feeling safe (health wise) when learning via Zoom, managing the high course workload, which at times felt overwhelming, and feeling embarrassed when taking part in activities in teaching sessions. However, Covid-19 requirements for physical isolation led to students also feeling isolated and, although teaching continued in a large cohort via Zoom classes, necessary changes differed from initial expectations of the nursing degree interactions.

I find that the Zoom groups across three campuses is quite overwhelming. Like a smaller group, 'cause I guess we all have discussions amongst each other... It's lonely.... I feel like through Covid and isolating at home there haven't been opportunities to like debrief amongst your peers... When you think of nursing you kinda think like working together with likeminded people or people at the same stage as you're at... I guess I was expecting to have more of like a social experience with nursing, rather than online. And it's very like individualised I've found. (SP10)

For some students, these feelings of isolation remained even when there were opportunities to join peers in Zoom breakout rooms, as SP8 points out:

you notice a lot more of like people from the same campus, they'll talk. And then you're just kinda on the outside going okay (SP8).

Feelings of isolation were not only a result of physical isolation but also became metaphysical isolation influenced by student participants' views of their learning experiences and perceptions surrounding what contributes to productive, hybrid learning environments. Some students were isolated while caring for sick family members or were recognised as essential workforce and were unable to attend scheduled teaching events.

Students also highlighted some difficulties in establishing a convivial learning environment. For example, distractions in online sessions were found to be challenging and stressful in comparison to on-campus sessions,

I just get quite stressed with the online aspect... like I like the face-to-face interaction. 'Cause online learning there are so many little distractions... where the classroom sort of aspect you're just in a class with everyone that's doing the same thing. You can like bounce ideas off people. (SP8)

Each of these aspects heightened the imperative for consideration of the emotional and cognitive load students were carrying, not just in relation to the course and course work, but also the underlying level of anxiety and stress that appeared to be a constant (Bennett et al., 2022).

5.6.5 Rich, Realistic Teaching and Learning

Students recognised the rich, realistic opportunities for teaching and learning in the course. For these nursing students, simulations allowed them to experience the practical application of knowledge. This was evident in several remarks:

You get to take that theoretical knowledge and then take that into clinical or the SIM lab and actually apply it. Put it to practice. (SP11)

This is the class that like makes me feel like I'm actually progressing towards being a nurse. Like I actually feel like yeah,

like if I got a job as a nurse right now I feel like I could do a pretty decent job. (SP8)

That's what this course is about... tying it all together so that you feel more confident when you are standing in front of someone...looking at them and being like oh, this is because of this, and this is because of that. But you get to practice it and learn about it before you see people. (SP10)

These students emphasised the benefit of being in a protected environment, watching and learning from others in the safety of a simulation exercise.

It's more of like a safe space I guess, like you can make mistakes or not know what's happening because it's not a real person. And then you can learn from that afterwards ...it's really good because it kind of brings forward things that I wouldn't have even thought about. And say I would have ideas that maybe wouldn't have occurred to anyone else kind of thing. (SP12)

The outcome of this rich, realistic learning environment was students reporting a sense of being better prepared for their professional practice. Such environments supported students to recognise a patient's vital signs and to be more informed and confident about the actions they take when acute care is needed.

Recognising when someone is starting to deteriorate... something wasn't quite right with her... I recognise the signs, I don't know what it is but something doesn't feel right...all the information that we were learning about in ICU, it wasn't as new as I was expecting which was nice. And it was all just kind of clicking together as they were explaining it to me, and I was like okay, I learnt about that, I know what that is, I know what that means. So that was quite cool. (SP8)

There were moments throughout like the week where I was working with the same person where I'd kind of have like this click in my mind where it was like oh that makes so much sense now. Like I guess I just don't really think that I know things until I realise that I do... I definitely had a lot of those like light bulb moments on placement where I'm like oh I know what this is, and I know why we're doing this now. (SP12)

Overall, this theme explored how students valued rich and realistic learning experiences and recognised their importance for future professional practice.

There was a tangible sense of satisfaction described by year-3 students in interviews when they spoke about the knowledge and skills they had learnt over several courses and applying it in clinical practice settings. The students' perspectives aligned well with what the lecturers had planned in the deteriorating patient simulation. This scenario brought the threads of knowledge and skills together into a cohesive whole in preparation for becoming a registered nurse.

5.6.6 Challenged and Equipped

This theme brings together aspects the students found challenging in learning and developing professional practice and recognises the benefit of collaborative learning for professional practice. A key aspect raised was the importance of sharing what one knows and learning with the experience of others.

I think obviously with third year quite a lot of learning is done on placement. And obviously everyone's experience is going to be completely different, so we've all got little bits of knowledge, that if we kind of put our brains together it becomes like a whole lot of learning. So just sharing our own experiences I think is what helps other people learn something... having someone else share what they've learnt or what they think is important gives me a chance to be like "oh actually yeah I never thought of that". (SP12)

Along with this, students were becoming aware of their growing professional knowledge and skills.

I think in the moment when you're learning about things you think oh, I don't know what this is and it doesn't feel like you're learning much. But, then later on you realise that you actually have learnt things, and it is all there. (SP12)

I had a moment on placement just recently where, I think usually as a student you know something will happen with a patient you're looking after and you go oh, I'll just go find your nurse for you. But instead, it was oh actually I can help with that, I can do that for you because I have that knowledge now. I know what to do, I don't need the nurse but I'll still tell them just in case...I felt really good leaving that day because it was like well actually, I feel so much better knowing that it's coming near the end, I think I'll be all right if I can do this now. (SP11)

Through the learning experiences one student clearly recognised the purpose of the intentional challenges in this course.

It makes me more prepared for if it does actually happen... I think the critical thinking is a big one that I'm gonna take away from it. Especially in clinical being able to use those skills with your patients. (SP9)

Participant responses indicated the reality of challenges faced but also acknowledged the importance of developing professional practice and confidence through challenge.

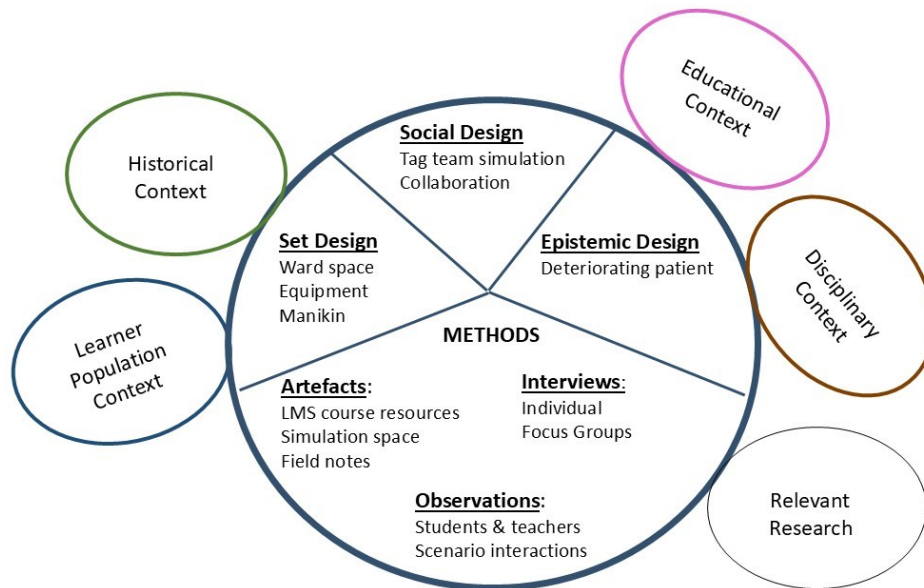
This section presented the experiences of students within an acute care nursing course delivered primarily in asynchronous and synchronous online modes. Interviews and observations occurred 12-months after the initial emergency pivot to online learning and the student responses indicated a sense of equilibrium and adjustment had been reached, with students indicating a sense of preparation for professional practice.

5.7 Summary – Nursing Quintain

This chapter advances the investigation of productive, hybrid learning environments by focusing on the conditions that are productive in rich, realistic clinical learning environments. The Case Study 1 Quintain (see Figure 5.5) guided data collection and analysis identifying key aspects of design for learning. The quintain was used to explore characteristics of productive, hybrid learning environments within this case by identifying aspects influencing key elements within the case. The similarities and differences in historical context, learner population, educational and disciplinary contexts across the three cases are presented in Chapter 8. The figure summarises these considerations, highlights core design for learning dimensions, facilitates synthesis of the themes generated from the data, and flags emerging issues specific to this case.

Figure 5.5

Case Study 1 Nursing Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

(Refer to 4.2.1 for overview of Quintain structure)

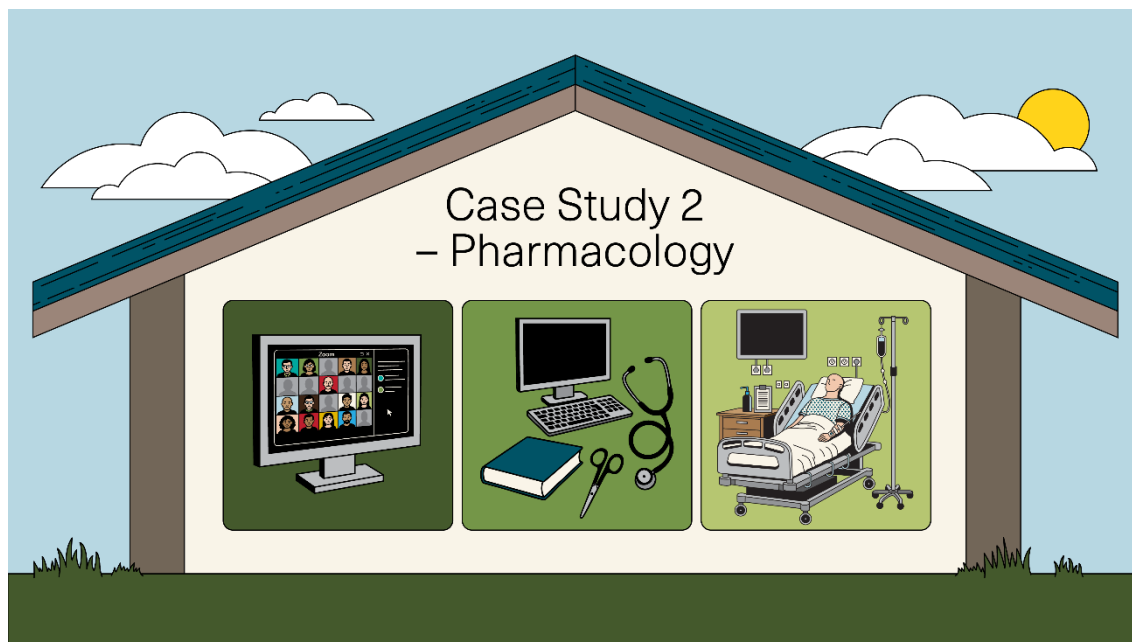
The findings indicate that productivity in these settings is governed by three interdependent learning aspects. First, Set design is most effective when virtual simulations, on-campus skills laboratories, and clinical learning experiences are seamlessly integrated, thereby minimising equipment bottlenecks and eliminating periods of instructional downtime. Second, Epistemic design is successful when each clinical scenario is explicitly aligned with vertically sequenced programme competencies, enabling students to comprehend the pedagogical rationale underpinning each task. Third, Social design is effective when peer mentoring and prompt supervisory feedback are embedded across both online and face-to-face modalities supporting a cohesive clinical learning community.

Themes across students and teachers indicated a broad consensus that authentic patient cases and integrated feedback loops constituted the principal drivers of productivity. There was divergence in views on what was considered acceptable levels of digital workload and the feasibility of a sustained supervisory presence.

Across the case, several issues also emerged that shaped productivity. Learners needed strong emotional safety, as mental wellbeing, financial pressure, and limited time constrains engagement. Simulation safety and effective priming for learning were essential, yet at risk when novice staff lacked professional development or awareness of core design for learning pillars. While Emergent, Co-created learning was the desired goal, it required deliberate scaffolding, tailored LMS content, and strategies to mitigate physical and meta-physical isolation. Designing clear pathways for applying learning to professional practice remained a critical priority.

Taken together, the findings suggest productive, hybrid clinical learning exists when authentic scenarios, competency-aligned tasks, and structured social support operate synergistically. These three mechanisms translated into practical design features that can be recognised and sustained. The next chapter explores the mechanisms in a fully online pharmacology course and will help inform aspects which are universally characteristic of the quintain, and which remain discipline-specific nuances.

Chapter 6. Case Study 2: Purposeful Structure – Creating Stability



6.1 Introduction

Case Study 2 – Pharmacology focuses on students' autonomy and agency and how a purposeful course structure can generate stability. It involves a second-year health sciences pharmacology course with 172 (of 175) students from nursing and three students from other disciplines. The course was transformed rapidly in response to the global Covid-19 pandemic with the reorganisation of course content into a modular format (*Set design*). Existing workshop content was reorganised into smaller, manageable packages presented in PowerPoint slide/videos and questions in interactive online (H5P³) resources (*Set design*). During data collection in semester two of 2021 the campuses experienced rolling Covid-19 lockdowns and clinical learning experiences were re-scheduled in response to lockdown restrictions.

³ H5P activities provide interactive content, e.g. video, quiz, presentations, drag & drop, which are embedded into the LMS.

The new hybrid modular format offered asynchronous content interspersed with regular synchronous online tutorials each focusing on two module topics. Students were afforded agency in determining when and how they would engage with the learning content so that they could factor in their clinical learning experience and personal circumstances. Teachers led live synchronous tutorials (*Set and Social design*) and shared their knowledge and expertise.

Analysis of this case study focused on observations and artefacts from two modules and an online tutorial, as well as interviews with four students (SP4, SP5, SP6, and SP7) and six academic staff (P3, P4, P11, P12, P13, and P17). Findings from interviews with teaching staff are reported here and were previously reported in Green (2022) (see Appendix 11).

6.2 Researcher Presence in this Case Study

In Case Study 2 – Pharmacology, my presence in the Zoom online tutorial occurred much like any student participant. Students had been informed of my presence and purpose prior to attendance at the tutorial; none raised concerns. My video tile was visible at the beginning of the session when introductions occurred. The teacher began to present and was spotlighted so that only their video image was visible. I did not take part in the text chat or speak to the course content on camera but instead observed the session in a minimally intrusive manner.

The process for reflexive thematic analysis of each case has been outlined previously (see Chapter 4.3). My thoughts and interpretation in the development of this chapter was rigorously interrogated by my supervisory team. This dialogic progression ensured transparency in the process and enhanced the trustworthiness and validity of the findings.

6.3 ACAD: Framing Course Design Elements

Key design elements were framed according to the three ACAD dimensions in Table 6.1. *Epistemic design* including 12 topic modules, written forum announcements, a comprehensive printed study guide workbook, and a

suggested study schedule to assist students to complete the course in a manageable way over the time available. Learning tasks within topic modules were primarily self-directed (*Epistemic design*) and included pre-recorded video lectures with PowerPoint presentations and knowledge-check questions embedded in interactive H5P activities (*Set design*).

Table 6.1

ACAD Elements

Epistemic	Set	Social
12 Topic modules	LMS (video, PDFs, H5P),	Whole cohort
Content and knowledge-check questions	Zoom tutorials (cameras, laptops),	Campus cohort
Weekly course announcements	H5P activities	Individual
Suggested study schedule (12-weeks)	PowerPoint slides and handout PDFs	Informal peer support
Study guide workbook		

In addition to the ACAD elements within the case, details aligned with the Aotearoa Design for Learning framework domains, incorporating a cultural frame of reference were evident (Table 6.2).

Table 6.2

Aotearoa Design for Learning (AD4L) Framework Domains and Evidence

Taha Wairua <i>Beliefs about learning essentials</i>	Taha Whānau <i>Relationships to assist learning</i>	Taha Tinana <i>Setting psychosomatic influences</i>	Taha Hinengaro <i>Cognitive process changes</i>
Maintaining rapport with students and staff	Creating a safe enjoyable and welcoming learning space	Awareness of hesitancy online	Demonstrating developing knowledge and skills
Realistic relevant learning		Teachers challenged with technology	Applied learning in realistic contexts
Orientation of new staff to learning design decisions		Loss of student connections	
		Directing students to support staff	

Students were supported to work independently and autonomously through the semester with weekly course announcements (*Epistemic design*) received by email via the LMS and in the course schedule posted in the LMS (*Set design*). This schedule provided a suggested study plan, identifying 'Essential content' and 'Suggested activities' (*Epistemic design*) (See Figure 6.1).

Figure 6.1

Course Schedule for Observed Tutorial

<input checked="" type="checkbox"/> ONLINE TEST – Modules 1 to 4 Monday 2 nd August - 9.00 am to 9.00 pm only		
4 2 nd Aug	Module 5 Drugs and the ANS <i>Read & Review highlighted Chapters of your Study Guide and Textbook</i>	Sit the online test <input type="checkbox"/> Watch the presentations and complete the questions at the end of each presentation <input type="checkbox"/> Complete weekly activity <input type="checkbox"/> Work on relevant parts of your assignment
5 9 th Aug (CP/SL – Alb only)	Module 6 Drugs and the respiratory system <i>Read & Review highlighted Chapters of your Study Guide and Textbook</i>	<input type="checkbox"/> Watch the presentations and complete the questions at the end of each presentation <input type="checkbox"/> Complete weekly activity <input type="checkbox"/> Work on your assignment Friday 13th August (9 pm) is the last day to complete the activities for modules 1 to 4

Each module introduced a new topic and was presented in a separate section of the LMS, which outlined the focus of each module and identified three content areas within the topic (see Figures 6.2 and 6.3).

Figure 6.2

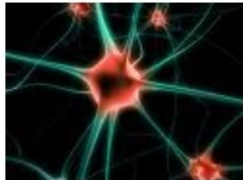
Module 5 Overview in LMS

MODULE 5: Drugs and the autonomic nervous system (ANS)

This module will explore the pharmacological actions of drugs that act on the autonomic nervous system, and identifies the main adrenergic and cholinergic clinical drugs and their therapeutic applications.

For this section there are 3 presentations covering:

1. Introduction to the Autonomic Nervous System
2. Adrenergic Pharmacology
3. Cholinergic Pharmacology



At the bottom of the page you can find a folder that contains PDF copies of the slides used in these presentations.

Figure 6.3

Module 6 Overview in LMS


MODULE 6: Drugs and the respiratory system

This module will look at the modes of action and adverse effects of the common reliever and preventer drugs used to treat asthma and COPD.

For this section there are 3 presentations covering:

1. Introduction to respiratory drugs for COPD and asthma
2. Bronchodilator drugs
3. Anti-inflammatory drugs and combination inhalers

At the bottom of the page you can find a folder that contains PDF copies of the slides used in these presentations.



The observed tutorial focused on Module 5 content – Drugs and the autonomic nervous system (Figure 6.2). In the tutorial, one teacher introduced the topic and spoke to slides (*Epistemic design*) based on those in the H5P (*Set design*) which reviewed medications relevant to the autonomic nervous system and respiratory system (*Epistemic design*). This session was scheduled prior to a test so that students' questions could be addressed (*Epistemic and Social design*). A second teacher responded to questions in text and by video entered in the text chat.

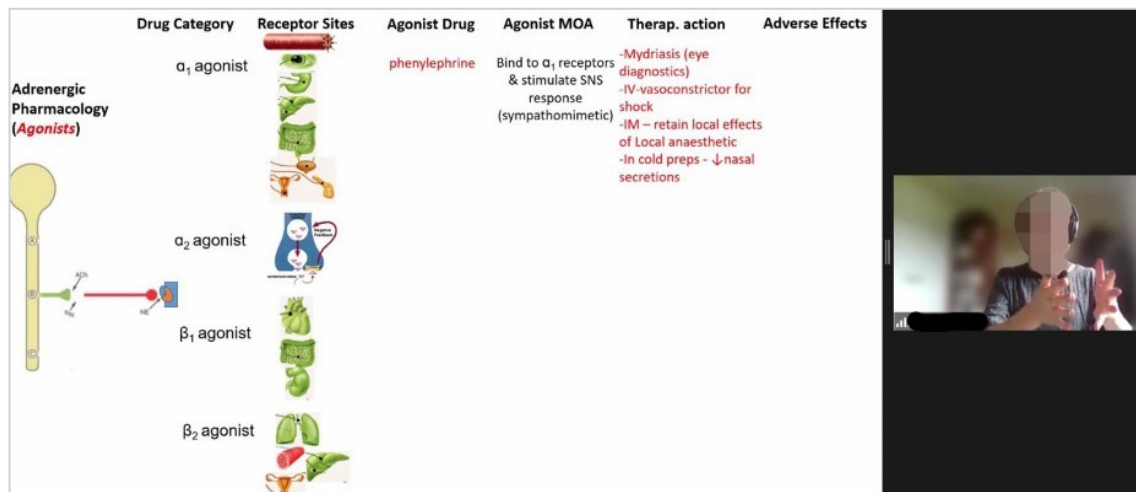
From the many elements in this course, the rapport between teachers and students stood out and the subtle strategies aimed at creating stability, including how the teacher intentionally paused after asking questions to allow time for students to enter their responses in the text chat (*Social design*). In addition, positive affirmations between the teacher and students often included humour. An example of humour included when chickens outside the teacher's home office interrupted the audio, and a positive affirmation included the teacher commending students for asking great questions (*Social design*). At no time did a teacher make a negative comment, despite students' cameras being turned off (only two students had cameras on), there were timely responses to questions. Teachers kept a light-hearted rapport with the students (*Social design / Taha Wairua*).

I wasn't going to admonish anyone for not engaging in the way that we wanted them to. I wanted them to know that, "hey, I'm happy for you to be here, and I'm happy to be here, and my chickens are squawking in the background, but we're all happy to be here! (P4)

Teachers understood the practical reality of some students and staff having limited bandwidth or privacy concerns such as the permanency of recordings with participant images visible. Privacy and psychological safety moderated and informed teachers' expectations of student engagement in online tutorials.

Because we record things online it provides a bit of hesitancy for those sorts of personal experiences being verbalized because it is going to be Zoomed out to everybody. (P4) (*Taha Tinana*)

Figure 6.4
Course Resource – Sequentially Developed



The teacher's intent was to present dense material in an easy-to-understand way that was visually interesting and story-related (*Epistemic design*). As the teacher explained, it is important to consistently fine tuning their designs.

Taking the slides you've got to... review them, think "how can I cut this down and integrate some questions in the end?" (P3)

The diagram representing the autonomic nervous system (Figure 6.4), which moderates the body's flight or fight response to stress by the releasing of epinephrine (adrenaline), was completed as details were presented by the teacher, and questioned and discussed (*Epistemic design*).

I tried to make links to experiential type information that could be applied to a clinical setting.... “So, you know epinephrine, you might probably use this if someone is having an anaphylactic shock” ... trying to just get them to think about that and apply it, so that it doesn’t become just a theory course (*Emergent / Co-creative activity / Taha Hinengaro*). (P4)

Throughout the observation of the tutorial it was evident that design elements had been carefully considered and resulted in purposeful sequencing and pacing of content (*Epistemic design*) as well as the use of resources, printable material and softcopy options (*Set design*) to promote learner agency.

6.4 Heutagogy in Action

In this case study, purposeful design for learning was clearly grounded on heutagogical principles (Blaschke et al., 2021). This enabled student agency and autonomy in completing learning tasks and modules in sequences that aligned with their personal circumstances. During my observations, one campus region was in full lockdown, so no clinical learning experiences were possible. As a result, course modules were open to students who were able to move ahead with tasks in an order and pace that suited them. While the regional mandate to stay at home affected students, some also had to homeschool their children, care for a sick family member or work part time as a caregiver. This latter group were deemed essential workforce resulting in the need to juggle work commitments, coursework and personal/family health care. The ability to choose when and how to complete course tasks was found to be essential to successful course completion.

6.5 Case Analysis and Discussion - Academic Staff

I interviewed six academic staff including two of the course teacher-designers (P3, and P4) and associated academic staff (P11, P12, P13, and P17) to ascertain their perspectives on the course design for a productive learning environment. Key emerging themes have been previously reported in Green (2022) (see Appendix 11). In this chapter the themes incorporate other academic staffs’ perceptions and focused on learner agency and autonomy. These include transformations in course design; supporting and challenging

students through a challenging societal event; designing the course format to promote teamwork and maintain continuity of delivery; considerations of improvisational theatre and the dynamics of moving away from an on-campus classroom delivery; and indicators of student learning within course learning activities. The first theme presents the challenges in previous course iterations and subsequent transformative design decisions.

6.5.1 Transformations in Course Design

Historically, this pharmacology course encountered challenges in providing learning for students who, due to clinical learning experience requirements, were sometimes unable to attend the weekly, six-hour workshops delivered over a six-week period. As stated earlier, this resulted in some students attempting to catch-up on extensive amounts of missed content. While the 12 topics in the course had related resources to support student learning, the supplementary content embellished by experts in the workshops was not easily accessible to students.

In addition, students and some staff requested the six-hour workshop be reduced and activities to increase student engagement be introduced. The passive format that had consisted of primarily watching a PowerPoint presentation while listening to the teacher and taking notes was considered to run for too long. Despite this request, some staff were reluctant to change the format perceiving all content was essential learning.

The travel costs for staff to deliver similar workshops over a week raised concerns. To address these issues, the teaching staff discussed the possibility of creating 12 discrete modules with content available in a hybrid format. The advent of Covid-19 necessitated a rapid redesign and compelled staff previously reticent to change the delivery mode, to reformat content into a fully digitally-mediated delivery.

While this change was driven by factors outside of teacher control, they all acknowledged the result was “a fantastic course site with some excellent, interactive learning resources” (P4). Reformatting content enabled the development of interactive H5P learning activities and reorganisation of topics

and content within the LMS. A distinct benefit was the creation of stable, consistent and interactive learning resources (*Set design*) based on best practice in the discipline (*Epistemic design*) and was available to students at a time and place of their choosing to accommodate changes to schedules for clinical learning experiences (*Emergent / Co-creative activity*).

While this redesign effectively addressed some of the known issues, it also created unanticipated challenges for staff. In the development of these resources and the subsequent need for shorter tutorials using a Zoom meeting platform, staff became acutely aware of their lack of proficiency with technology.

I guess other constraints are my ability to keep up with the technology. And how to use it and not having the time to really receive training to do so. So ... the more you shift [to online] distance the more I think you have to become adept at knowing how to utilize these tools and when they're appropriate to use... in an appropriate way for the level and for what you want your students to learn actually takes a long time. I constantly feel rushed and not able to take that time to really thoughtfully consider some of those elements. (P4) (*Taha Tinana*)

Given the rapid reconfiguration in design for learning, professional development had not been possible for the pharmacology staff. However, they were supported by learning developers in the creation of the H5P resources.

When I think about the pandemic, I love Sally Kift's expression of 'Panic-gogy'⁴ ... just lifting face-to-face, talking heads lecture-style into Zoom with the odd little extra in terms of online edu-tech tool and mistakenly thinking that good distance education is the result ... I'm very scared that people think that Zoom is what we do! (P17)

The planned and crafted redesign of this course provided purposeful use of a variety of synergistic learning resources and activities. The transformation to a modular format for topics enabled access to occur in line with student preference and relevance to current clinical learning experience. However, Covid-19 triggered cancellations of clinical learning experiences in the first semester, resulting in additional 'catch-up' in the second semester. The new course structure, despite feelings of uncertainty when clinical learning

⁴ Originally reported in Kamenetz (2020)

experiences did not go ahead, ultimately led to less disruption with students' learning.

It meant that the [Campus B] students, who had a horrendous time [with the pandemic] because ... [throughout the whole semester groups] were on placement. And all the other variations in between could kind of work away. We opened the course site early and so some of them did start early. (P3)

Despite the evident advantages of the revised structure and mode of delivery, teachers expressed concern at the loss of tangible connection with students in a classroom (*Taha Tinana*).

I think just that physical presence between individuals seems to stimulate more guidance, more interaction, and more interesting discussions than perhaps an online tutorial.... I feel like when it's just an online tutorial it's too easy for students to be passive or not engage...Although, we got some really good engagement actually last year (during Covid-19 in 2020 Sem 2). I was really impressed with it. (P4)

For some, there still appeared to be an ambivalence of the benefits of the changes to course design and delivery.

6.5.2 Supporting and Challenging Students

Students were completing this course and other courses in a new, fully online format that required technology, the ability to trouble-shoot connections and access resources. Some students were managing challenging clinical learning experiences with acutely unwell patients and the healthcare environment with regard to the use of personal protective equipment (PPE) protocols kept changing. This was further complicated by staff and students often being unable to travel to support their own family / whanau in times of illness or distress. Teaching staff had a heightened awareness of students requiring support and acknowledged the professional limitations and personal toll they felt and the importance of directing students to appropriate support staff within the university (*Taha Tinana*).

Within this context, the intention was to design the course to prepare students for graduate practice. This involved introducing pharmacology resources used in clinical practice settings such as, the New Zealand Formulary (NZF),

Medsafe data sheets and the Best Practice (BPAC NZ) resources. Students were shown these in the first tutorial and were later required to find information in these resources in interactive activities and course assessments.

We're teaching them how to use those tools and how to use them appropriately, and how to analyse those tools or those bits of information. In the background, there are of course very structured, interactive, nicely scaffolded activities for them to complete as they go through the course. And as well they have an assignment which is very case study oriented, very applied so that it's not just theoretical. How things attach to receptors necessarily but talking about actual drugs with actual people and actual effects on the body. (P4) (*Epistemic and Set design / Taha Wairua*)

In the previous course design, teachers noted a tendency for students to use a Google search to find medication information for course work, however, this often led to medications unavailable in New Zealand or to incorrect information about the medication. In the current design students were increasingly required to incorporate New Zealand Formulary (NSF) information on medications into their coursework, culminating in its use in the final exam. Supporting students in the use of resources used by New Zealand healthcare professionals demonstrated an authentic learning opportunity that provided accurate and relevant information expected to be used within current clinical contexts.

6.5.3 Maintaining Design Continuity

Continuity in learning design provided a stable context for both teachers and learners. For teachers there was an opportunity to establish clear and transparent learning outcomes, create assessments that would demonstrate achievement of outcomes, and curate content to progressively develop student knowledge and skills. For students, a stable, predictable learning environment provided guidance through the material to assessment points and to future professional practice.

Maintaining design continuity within a course and across a programme requires time to plan integrated course components and develop resources. Sufficient time and expertise for initial and ongoing course development must be factored into programme administration and management.

So, any design, I think our teachers need to be themselves, they have to breathe their own personalities into things, and that's really important. But there has to be the pillars of the design on course and program level. Any changes to those will change the whole learning experience. That's what needs to be protected. (P17) (*Epistemic and Set design*)

Therefore, when new teaching staff are brought into a course it is essential that they are orientated and inducted into the design for learning used and have a clear idea of the rationale for the placement and inclusion of learning activities (*Epistemic design / Taha Wairua*).

Hopefully they look at the thing and go, “wow, these things are here for a reason. Right, I know what to do, and I know how it's working and why it's working”. (P12) (*Set design*)

The focus on maintaining design consistency existed not only within a course but also extended across a degree programme.

You actually are thinking, “what are the threads that go together even within a within a cohort” and then how do we design for a progressive learning experience for our students? (P17) (*Epistemic design*)

Students are typically enrolled in a degree programme with all courses designed and positioned to facilitate graduate practice. Providing a consistent structure and design in a course can support students to navigate through all LMS course sites.

They go in and it's easy to navigate through the content. And they can see where they're going with it, and they can see what they've done, where they're going ... And it all makes sense like there's a rationale behind everything that's on there... and why it's there, and that's not often found in courses. (P4) (*Epistemic and Set design*)

Good design. I guess, you don't notice it...you notice bad design and unless you're comparing the two, I'm doing one course which is really nicely designed, and I only know it's nicely designed because I'm doing one that is not designed at all. Yeah, I think it is probably a hidden thing. (P12) (*Epistemic and Set design*)

As such, design continuity was optimal when it encompassed a HE institution-wide approach.

Our team working together and establishing some consistent practices and a consistent look and feel. Even having like icons and things to help guide the students that we can use consistently and that really, I think that really helps. (P12) (*Set design*)

In addition, the creation of H5P interactive activities provided consistency in the design for learning. However, there is a danger of 'content creep' when an overall perspective of the course design was not present and a teacher new to a course decided to include additional content or remove content without awareness of key design course features consistent across other courses (*Epistemic design*).

I really like the 5HP format in that you can make even better links than we were having with the blocks... it does need someone to have an overall manage that because I've seen other 5HP in [names another course] ... but I can see there's a bit of divergence happening already... I think you need that consistency. (P3) (*Set design*)

Attention to maintaining a consistent approach in design for learning requires stability of learning resources and, as in this case, was affected by continuity of teaching staff. There needs to be effective and clear communication of course priorities within a teaching team and a degree-wide view of the scaffolding of content or skills to create a stable and predictable design for learning congruent with the components of an academic programme and higher education institution.

6.5.4 Improvisational Theatre

The move away from on-campus, co-located teaching to synchronous Zoom tutorials created challenges for the pharmacology course teaching staff. P4 likened this to moving away from the spontaneous, improvisational classroom theatre that they loved (Green, 2022), and progressing towards a carefully planned and scripted, digitally-mediated approach that lacked freedom to respond in-the-moment as they previously could. This teacher felt apparent 'spontaneous' responses to student learning needs required careful preparation for multiple aspects that students might enquire about and needed the prior

creation of potential resources that might not be used. Overall, this change in *Set design* (from on-campus to online tutorials) seemed to be perceived as affecting how the teacher might go about *Epistemic design*. P4's comment below illustrates how the change on the mode of delivery was perceived as needing more planning and how this also affected the improvisational feel of how the *Emergent / Co-creative activity* often unfolded.

That's why face-to-face is somewhat easier as well. Because I've got other tools that are quickly brought to play. For example, I might start a discussion, or I might have an online clicker thing, or I might have some worksheets.... Or I could say, 'hey let's build up a table and we'll each contribute to that table', and those kinds of things are often ad hoc depending upon what kind of feedback I'm getting in the class. And where I see the gaps are, and online you have to have all that prepared ahead of time, right? And you have to assume that they're needed when they may not be needed ... But that ability to sort of say actually let's create a table and do that out in your breakout rooms or whatever. For me that is quite challenging to do ad hoc without having prepared that and actually thought about that ahead of time. (P4)

Nevertheless, during my observations of the tutorial I noticed moments when there was clear evidence of improvisation in the synergistic development of content with applications to realistic therapeutic uses in community contexts. An example was when P4 was discussing the use of respiratory medications to treat inflammation. P3 joined the conversation to bring in a real-life application describing their prior use of this type of medication while diving. This conversation was enhanced by a student participant whose expertise as a diving instructor contributed to practical uses of these medications with divers.

Feelings of disconnect due to the change in mode of teaching delivery to the online environment were reported. P4 speaks about strategies used when developing course resources for students:

it can feel frustrating when you don't know if they're engaging or not, and you don't have that human... connection. When I'm recording something online...I always pretend there's someone there... I try and smile and do gestures... it's kind of like role-playing, that there's another human there... So, that is intentional. And I always say to myself before any lecture like and I've done this for years like my mantra is I'm happy to be here and everything's under control, even if it's not, and even if I'm not

happy to be there, like the persona [is] you're okay, you're cool. We got this, you know. Usually I don't, but no one knows that [Laughs]. I'm not sure how much that comes across, but that's my intention. (P4) (*Taha Whānau*)

Despite experiencing feelings of loss in the move to a different teaching format, P4 incorporates elements of self-modulation to create a positive enjoyable teaching and learning environment, inviting learners to connect with them while also acknowledging there will be differing reasons that modulate student activity and engagement in the synchronous online tutorial.

6.5.5 Student Activity and Indicators of Learning

Typically, in an on-campus, co-located teaching session a glance around the room can enable a teacher to 'read-the-room' and potentially gauge levels of engagement. However, in the online environment such analysis occurs differently. Initial views of Zoom attendee participant tiles and preconceived notions of engagement can be misleading. While there were few students with their cameras on in the observed tutorial, interactions in the text chat indicated that others were engaged and following the topic.

... as long as something's happening, I think that it makes it easier for us to be creating the space, you know what I mean? So, it's like we need that back and forth. (P4)

Being able to connect in timely interactions with students supports their engagement with learning activities.

The lecturer can provide immediate feedback during the workshop, or after the workshop, related to the topic. It's a good learning opportunity. (P13)

Students commented on their initial lack of time management and subsequent development of such skills for course work and assessments. To support student learning, P11 noted the benefit of encouraging students to book appointments with writing advisors to create external scaffolding and "artificial checkpoints" in the lead up to assessment due dates (*Social design / Taha Whānau*). This enabled students to submit assessment on time and

demonstrated their developing knowledge and skills (*Emergent / Co-creative activity / Taha Hinengaro*).

Overall, these themes suggested the academic staff recognised a clear need for change and enacted this by transforming face-to-face workshops into a modular online format. Academic staff adapted their approach to design and teaching by responding to students, including their expectations of student engagement within the course. In the following section I explore the themes generated from interviews with student participants.

6.6 Case Analysis and Discussion - Students

The interviews with four students took place on Zoom during the second semester of 2021 at the conclusion of the course. A focus group interview took place with SP4 and SP7, while individual interviews were conducted with SP5 and SP6. Each student was navigating differing personal circumstances. SP4 was considered essential workforce and had taken on additional shifts due to health staff shortages to attend to the pandemic emergency and therefore had limited time for coursework. SP6 had been stood down from their fulltime role during a Covid-19 lockdown resulting in additional time available to complete coursework. SP5 was at home during a regional lockdown and was homeschooling children. This resulted in their 'fitting in' pharmacology course work in the evenings when the children were in bed. Similarly, SP7 noted the challenge faced in managing their time and staying focused without regular contact with other students and teachers. The data from the interviews represented different situations, challenges and experiences. In the analysis, there were seven key emerging themes including awareness of extended boundaries in learning; students valuing agency and autonomy while engaging with course content; recognition of curated content and purposeful structure in course design; appreciation of interactions between students and teachers; the importance of conviviality; the benefits of rich, realistic teaching and learning; and the influence of being challenged and equipped for graduate professional practice.

6.6.1 Becoming Aware of Extended Boundaries

As mentioned previously, as part of the course resources, there is an extensive study guide for students to work through course modules. This resource was often referred to by students for its usefulness and relevance, not only for a specific module, but as a reference tool for their (future) professional practice.

I found the study guide really useful. I'd try and, not necessarily at the same time as the PowerPoints, but potentially a couple of weeks later, going through the study guide and I guess trying to rehash through there. I saved it on my computer and went through and highlighted what I thought were the important points of everything, with a gauge to using it as a bit of a reference tool later on. (SP6)

Another student, who noted their challenge with dyslexia, appreciated the many options of resources available in different formats as beneficial for their learning. Additionally, this student noticed the use of interactive, online tasks within the LMS site to include voice-over explanations which were followed up with focused questions for students to answer.

When I heard it was online I was actually quite upset, because of my situation with my dyslexia. I found it really difficult if I was going to have to read everything. But, then I went into the modules and noticed little voice things, I was really happy because then I could pause it, listen, pause it. So, I did that, I kid you not, maybe about five to 10 times at least for... one page. (SP5)

The voice-over explanations provided support to this student as they expanded the visual course content by explaining the information. The provision of video resources provided a high level of flexibility to fit with student requirements.

The fact that they have recorded, so I could go back to the recording and relisten and, you know, maybe write extra questions down...I'd say the flexibility of all the modules being open and you being able to choose, like, I'll do the two really small ones. Because, I've only got, you know, tonight to go through it today because the kids have got sport tomorrow or whatever. (SP5)

Students recognised that the course design provided multiple ways for engaging with content and supported their learning beyond the usual on-

campus teaching session. A shift to fully online learning necessitated consideration of the technical infrastructure required to facilitate the extended boundaries of the learning environment.

I did not have a good study space at home. So, I was studying in my car to try and get internet at, you know, at work. Or, at the uni sitting outside just to get internet. ...that's something to remember is people's situation, if you have a fully online course there has to be a way that it's fully accessible for everyone. (SP4)

Throughout the student participant interviews the benefits to learning were often mentioned when resources were available to enable flexible access in various formats and time, place and context could be decided by the student. In combination with pre-emptive brain priming on course topics, flexibility supported students to manage their learning alongside with their life load commitments of family/whānau, school or sports activities and part-time work.

6.6.2 Students Value Agency and Autonomy

This second theme includes aspects of andragogy (Knowles et al., 2020) and heutagogy (Blaschke et al., 2021) with students recognising their autonomy in organising their course schedules and valuing the agency this provided. Learning tasks infused with andragogical principles were those when learners were autonomous and self-directed – which included organising their time. For SP4 the experience was positive. Once they were able to settle into a routine and establish a schedule, they could see how the teachers had planned the course and resources to support them.

It might seem really overwhelming to start with. But if you just take it a week at a time and use all the resources that they give you. 'Cause, they've set it up for you to succeed. And, if you do it how they've planned it, then you will do well. (SP4)

One participant struggled with continuing coursework while simultaneously supporting completion of schoolwork for school-aged children unable to go to school or after-school care due to the Covid-19 lockdowns.

...a lot of times I was only able to do two afternoons and then nights, when they went to bed... I wasn't absorbing it as much

when I was going 'til two o'clock in the morning.... it was hard.
(SP5)

Another student experienced more freedom to focus on course work due to different circumstances and time away from regular employment due to the lockdown.

I don't have family commitments ... I found it quite achievable. I was actually quite lucky though... I'd pretty much finished the assignment and then, I think we were in lockdown for maybe a week before it was due... I was really glad that I wasn't working at all because, particularly the referencing was relatively new to me... and going back and finding stuff that I could add in. So, I think I did a lot better on the assignment, than I might have otherwise. (SP6)

A key factor in andragogy (Knowles et al., 2020) and heutagogy (Blaschke et al., 2021) is the personal sense of achievement that can come from learning. The students seemed to value a sense of achievement, which was evident in their motivations for learning,

I've got a lot more drive to succeed at things...as you get older you realize life is running out. You want to do something decent with it ...but also, particularly because it's a degree where at some stage people's lives will be on the line... at some point you have to stop trying to get that extra mark... I think you can put in more effort than your life circumstances would allow... You have to understand what's achievable for you in your life situation at that time, and you have to learn where the off switch is. (SP6)

Students' motivations for learning included seeing a value in accomplishing course requirements and the enjoyment in learning. An essential element, the centrality of the students (Hase & Blaschke, 2021), was apparent in the learning process through their individual perceptions, experiences and circumstances within the learning environment.

6.6.3 Purposeful Structure and Curated Content

Student experiences within the previous years that had been characterised by a rapid move to online delivery for all learning appeared to help them distinguish between emergency and purposeful course design. SP4 identified the benefit of teachers curating course content rather than merely repeating the presentation

slide content. They liked the use of collaborative Zoom times to apply what had already been presented in course material, as it was apparent for SP4:

Maybe covering the major points but also adding more questions in... like multi-choice or case studies that we could discuss... rather than having a big Zoom that covers probably a bit too much... for our brains to hold attention for. (SP4)

The theme of careful curation and course structure was also evident in remarks about time management and length of online meetings. The length of time on Zoom was identified by SP7:

I love that idea to be honest. Because, two hours, it is real easy to get side-tracked (*laughter*). But, if it was an hour and actually had specific things to focus on, it'd be great. Because, then I could actually get into it for the whole hour. (SP7)

By providing resources beforehand, it could be possible to shorten the time of a Zoom session, using the “saved” time to focus attention on applying knowledge, as in case studies, which was acknowledged as beneficial. However, SP5 noted that often material presented in a live session was repeated in online resources, and recommended:

For us to understand it more I think they need to take it up a different level like when they do in the actual classrooms... so then you almost feel like you're delving more into it. (SP5)

Students further acknowledged the benefits of using resources with direct relevance to clinical practice. “Best resource out of all with this course was the study guide. If anything, keep that [*laughter*], keep that in there” (SP7) and “that study guide is massive [*laughter*]. ...lots of medication and lots of things to know... something that you needed to know. We're looking after people's lives... [*study guide*] it was very helpful for studying”. (SP5)

The students also appreciated course design that facilitated opportunities to check their understanding of content.

I think the questions that are added at the very end ... make you either remember what you've just learned or go back and check something that you might have missed or whatever, are quite good. I almost feel like you can have more of those, or have them

go into a bit more detail... And that it's probably quite a good way to practice for the exam because some of those questions [are] quite similar to the type of questions you get, quizzes and stuff. (SP6)

Some students found the design of assessments enhanced their understanding of the course content and supported their learning. Alignment of content with assessments to support learning was evident in SP6's response:

..having a really good, solid research-based assignment is quite useful and quite good. Because it allows you to go into as much detail as you want to. When I first looked at the assignment, I was a little bit surprised at it, because it was an assignment, but it's mostly just answering questions. But I started to look at it, after a while like that assignment is not so much testing you as such, but it's more of a learning tool. (SP6)

Clear signposting in course websites helped students to keep on track, including by using self or auto-ticking to complete activities. This enabled students to easily gauge the work that remained for them to complete.

I would just follow the way it went, the different modules...When we had that holiday week, kids were still at school that week, so I smashed two of those out. But, other than that, yeah, I just followed, like, followed the steps. I did like that it would tick... automatically after I'd finished. (SP5)

During interviews, students discussed the value of being able to review content and return to learning resources multiple times, which assisted with the retention of knowledge.

So, here's the information, you've got a base-idea now... basically look over it again because you have to meet the standards of ticking all the boxes. So, you've covered it twice which is good because then I can remember it because I've covered it twice. (SP7)

Students could also search for their own curated content, which was highlighted by SP5 who located resources to extend their knowledge of specific topics:

...people on YouTube were explaining they just make it so much easier to understand. Because, they have the bright colours, and they've got the pictures... For example, they were going on about the adverse reactions, they were showing people being sick....

And I don't know why but it sticks in your head, and that's what stuck in my head. I was, like, yes, that's right, that person had an adverse reaction, hearing loss... I remembered because of the picture. (SP5)

These examples suggest that repeated engagement with learning content in novel ways can enhance learning and support the development of long-term memory. Offering opportunities for students to bring their own curated artefacts on related content might also contribute to enriching hybrid learning environments.

Students appreciated the currency and usefulness of course resources.

Honestly, those are great [*referring to resources used in practice*]. They've been one of the best things, is I like the fact that they actually said, "these the things you're actually going to be using, so use them" ... It's good to know that learning that we are doing is actually something that we're going to be doing. (SP7)

Participants noted the structuring of course websites and resources with content 'chunked' into smaller amounts helped to focus learners who then had more time to engage with teachers in discussions about the practical application of content. These aspects were characteristics of hybrid learning environments that sought to facilitate engagement.

6.6.4 Student-Teacher Interactions

During my observation, teachers were often encouraging students to participate. However, SP5 noted that despite encouragement to ask questions anonymously before a session, this was not useful as questions often arose in the moment while a teacher was presenting a topic. SP5 identified the guidance given on the use of resources such as mind maps was very helpful.

So, I did print out their maps... and that seemed to work a little bit better. But the only thing is I found if they put the mind maps then they need to actually explain the mind maps as well. (SP5)

This student identified they were also managing dyslexia and found reading alone to be insufficient to support their retention of new information. Interactions between student and teacher in this case, included the teachers

embedding audio voice-overs within the online modules, as highlighted earlier in 6.4.1.

For others, connections were enhanced by teachers being approachable and answering questions:

if I had any questions or any concerns, they were always willing to help and also, I was on placement and it... was a question about a medication I gave a patient, but it wasn't a medication we needed to know... I just felt like I could ask [names teacher] about it. And she answered it, and that was really helpful for her to go above and beyond but also be there to help. It was really, really good. (SP4)

Some participants found personal interactions with teachers via Zoom boosted their motivation. For SP7, regular interactions with teachers had directly influenced their engagement with content and helped to maintain connections with their teacher:

I'd rather [have] over encouragement than no encouragement. Because online learning is really, really hard so even just catch-up Zooms or just little Zooms or anything at all. Because I just remember especially in the first couple of weeks of lockdown, I just had no motivation at all...I think Zoom call with [names a teacher], ...just gave me a little bit of motivation even for a couple of days...I've seen some faces, they're feeling the same as me. They're doing the same as me, I'm going to get back into it like everyone else and then, even once or twice a week. (SP7)

Student participants consistently reported interactions with teachers were crucial to staying motivated. It appears co-presence whether physical or in a digitally-mediated capacity was essential to continued learning.

6.6.5 Making it Light-hearted - Conviviality

This theme revolved around students' enjoyment in learning through the establishment of convivial connections with peers and teachers during activities. The uncertainty that pervaded lives during the pandemic made conviviality, where students experienced fun in learning activities, of high importance in supporting learning. Comments often related to sudden changes made in response to Covid-19 which called for:

Making it so light-hearted and everything, you know, just made us remember things so much better. (SP5)

There were also references to the importance of making connections with peers online and later when meeting in person.

We'd normally... discuss a few things within the little group that I worked with. So, yet again, that was another element to build on top of what we'd learnt. Especially during the first couple of weeks was get our heads together and try and wrap (*laughter*) my head around it. (SP 7) (*Social design*)

Peer support was seen as beneficial to understanding the course content. Campus peer groups existed prior to the pandemic, but despite previous convivial experiences with supportive peers, the effects of isolation in lockdowns was evident, and appeared to stifle peer support outside of the scheduled Zoom tutorials. SP4 noted the importance of keeping these connections:

Six of us are in a group chat and if we have any questions we'll ask each other. But it was kind of more when we interacted in the Zoom. That was kind of the only time that we could really interact with each other, like, in a face to face... when we were in uni we'd always ask each other and be, like, hey how's everyone going or feeling on this? But once lockdown hit, we kind of didn't do that. (SP4) (*Social design*)

Students described being identifiable during online sessions. The recording of Zoom sessions, combined with students' being recognised when asking questions in sessions, had the potential for greater exposure and embarrassment:

...whoever's going to listen again they're going to hear you again asking this question. And, I know they say, you know, no question is stupid, but you feel that way, like, when you're asking it. And so, yeah. So, I mean, I found myself asking questions and felt like maybe I was the only one, like, there wasn't many people asking questions. And so, I found it a lot less interactive than if you were in a class. I think it would have helped other students, but another part of me was thinking, oh my gosh, this is being recorded. And, you know, like, yeah, it's definitely an embarrassment thing, it's not comfortable to ask. (SP5)

While connection was seen by students as a helpful and important aspect of their learning they identified challenges to connections with peers and teachers and a sense of embarrassment about some of their interactions in this hybrid learning environment. In summary, the key aspects discussed in this theme included the benefits of humour to support retention of the content learnt and the importance of connection with peers and teachers. Students discussed the challenge of asking questions in recorded sessions knowing it had the potential to be embarrassing in an ongoing way; some may not have contributed as a result.

6.6.6 Rich, Realistic Teaching and Learning

This theme highlighted the benefit of having opportunities to use realistic resources and learn in settings that developed clinical knowledge and skills in preparation for professional practice. Participant data indicated proficiency in using clinical resources and clinical learning experiences and the excitement of 'lightbulb' moments when students realised the depth of their knowledge were instrumental in their overall learning.

Courses focused on preparing students for professional clinical roles introduced the details of professional practice. They noticed how key tasks in pharmacology supported an understanding of the medication classifications and therapeutic uses and the course study guide provided a useful reference. Students commented on learning to locate information about medications in the pharmacist resource 'New Zealand Formulary (NZF)' and the importance of taking time to understand medications before administration.

...when you look in NZF and it says, like, you know, this medication is a sympathomimetic or it acts on this sort of cell. You can be, like, okay, well, I know that. I can read that word and be, like, okay. I might not know that medication, but I know how it acts on the body. And, knowing that terminology and also, like, where to look it up it's, yeah, she's [teacher] definitely succeeded in that. (SP4)

In addition, the effectiveness of using practice-based, well-designed realistic resources, such as the pharmacology course study guide, were evident in student responses, as illustrated by SP6:

It's fairly well designed in that it expands your knowledge very well, but, as we were discussing earlier, it teaches you how to use those tools and how to research different things, and that sort of thing and it's not so much about rote learning. (SP6)

Students also referred to needing to know about new information about medications and safe administration in the pharmacology course. For example, SP6 was surprised by the lack of rote learning or memorising in favour of knowing how to access and use resources available in practice:

...this course has been about learning how to use tools, like getting a pretty broad pharmacological knowledge and expanding on the physiology as well. But learning how to use those tools which you would be using on the job. (SP6)

SP7 who administered medications during their clinical learning experience realised how essential it was to know where to locate up-to-date information about the medication they were dispensing, so they could educate the patients who were prescribed the medication:

Have a little bit more patience (laughter) in terms of taking a bit more time and making sure that, not only the patient understands it, but I understand it. In case it's something I'm not that familiar with or knowing that I should probably seek further information on it. Just to make sure I'm giving what actually needs to be told to the patient and not try and pull it out of nowhere. (SP7)

Participants were able to use the NZF resource and the course study guide within course assessments. SP4 reported enthusiastically that the study guide was an amazing resource:

I got the study guide, which was an amazing resource. I printed it out, I paid money to print it just because... it was crazy. But it was probably the best thing I did. And, before the exam, went through all of it. Highlighted it, but then I went and did, like, a mind map and just branched off. And, as I was kind of doing it I kind of felt, I actually know, I can just write this word, and I know what it means. I don't have to be, like, "oh no, I've written this word I have to go search it up". 'Cause, I guess, being online, you have the temptation to be, like, I just won't study that because I can just search it up on Google or NZF or, you know, there's always that temptation. But, with this I kind of knew it already, and I didn't feel like I had to search it up. I knew the answer. It was kind of something small, but it just felt like I understood. (SP4)

Developing proficiency in using resources was understood. Theories and skills learnt in the university setting needed to be translated and practiced in clinical learning environments. SP4 pointed out:

...on placement pharmacology really helped being on placement. 'Cause, I was on the [names ward] medical ward. And my preceptors would ask me what this medication was, why I'm giving it, what I need to look for. And, having already done some pharmacology I could answer some of those questions and understand why they are asking those questions. (SP4)

Both, SP4 and SP5 commented on the importance of understanding the medications they were dispensing and their role as the final step in medication safety before administration:

You have to know it because, as a nurse it's your responsibility, you're giving that medication. So, I guess, it's a lot more pressure, for me I feel there's pressure for me to learn it. (SP4)

We're definitely the safety net. I mean, not only for doctors, in general we're the safety net for the patient ... it's opened up my eyes to what I should know, and so now whenever I do look at a drug I'm already thinking I should check what's in it. I should check what reactions would be. So, it's definitely opened my eyes to what I should be looking at as well. Not only, is that what we use for that. (SP5)

This theme has demonstrated students' awareness of the need to incorporate resources and tools used in clinical practice settings into course resources. The knowledge gained in using the resources was recognised as requisite for safe practice; knowing where to locate specific information on medication administration was essential, including for patient health literacy education. The course study guide was seen as particularly useful for summarising content, prompting recall, and developing an understanding of medications. Students appeared to have developed sound knowledge of medications administration to the point that they were able to apply this knowledge safely in their clinical practice.

6.6.7 Challenged and Equipped

This final theme identifies the challenges and the importance of developing knowledge and skills in preparation for graduate practice. Some students felt apprehensive at the start of a course. For others, the challenges became evident when they reflected upon professional practice. They acknowledged there were gaps in their knowledge and spoke of a shift in their perspective on learning and interactions with people seeking healthcare. Students reported diverse and challenging clinical learning experiences but also recognised their developing capacity to act professionally.

Some students mentioned initial feelings of apprehension about courses. For example, SP4 described how a friend's experience had affected him:

I heard the negative things going into it. I heard that it was the hardest paper that you'll do throughout your three years... And so, I was really, really nervous about doing it... It was so much better than what I was expecting. So, it definitely exceeded my expectations. It wasn't as difficult, but I think that's the way it laid out in comparison to how my friend had done it before, to how it's laid out now. I think that really helped. (SP4)

Prior to SP4's enrolment the pharmacology course had been extensively reformatted for online delivery. Despite expectations, SP4 had a positive experience:

I feel like that changes how people come to it, like your attitude towards learning. Especially in Covid like you've got to be motivated. You've got to be the one doing it 'cause it is online you have to initiate that studying. You've got to be the one to ask questions, to engage in the Zooms. Yeah. So, I think for the biggest thing that helped my success was, even though I had the expectation that this was going to be hard, it was that I needed to work hard. (SP4)

Self-realisation and professional growth are markers of emerging preparation for graduate practice. Key to this is a deliberate intent to put in the time and effort required to learn:

Challenging on how you're trying to start to teach yourself as well at the same time, because it's online, you having to try figure out... how you study, I found that really challenging, I had to figure

out my way of absorbing the information. Which is why I went to YouTube and watched all those, that were really good. And, then obviously writing down, all my notes and, re-reading and relistening over. I listened so many videos it's not even funny. (SP5)

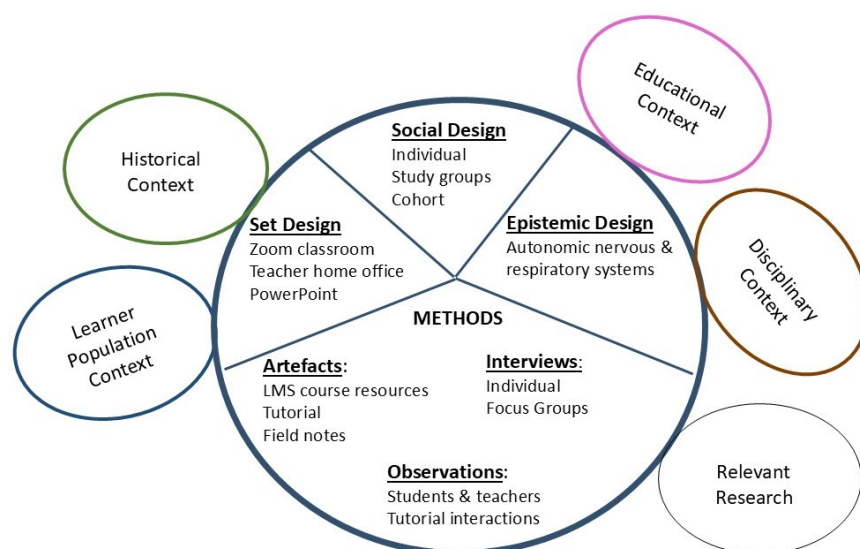
In summary, this theme identified a growing awareness of professional challenges in clinical settings and student insights into their capacity for graduate practice. They recognised their 'productive struggle', acknowledged gaps in knowledge and the importance of becoming reflective practitioners.

6.7 Summary – Pharmacology Quintain

The Case Study 2 (CS2) Quintain (see Figure 6.5) offered a synthesis of design for learning aspects analysed in the data. In comparison to case study 1, differences were highlighted in relation to Set and Epistemic design with the use of a Zoom classroom, PowerPoint presentations, and teachers located in their home offices. Contextual aspects at the periphery included disciplinary-specific epistemic content and Covid-19 lockdown restrictions changing during course delivery.

Figure 6.5

Case Study 2 Pharmacology Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

(Refer to 4.2.1 for overview of Quintain structure)

The productive, hybrid learning environment findings in CS2 indicate Epistemic design is successful when the volume of material is manageable and can be accessed and activities completed in an order aligning with student preferences and personal circumstances. Academic staff who were interviewed advised that this required an overall strategy to ensure continuity of design for learning existed within and across a course, a degree programme and an institution-wide approach was taken to LMS design and formatting.

Second, Set design is most effective when course material is structured, and scaffolded to support development of knowledge, skills and practice with tools used in graduate practice. In this case, the study guide was also a key resource for future practice. The use of the NZF resource aligned with current, clinical practice. Design within the learning modules followed a predictable format to minimise cognitive load in navigating the LMS, and the emphasis was placed on developing an understanding of medications and therapeutic administration.

Third, Social design thrived when there was recognition of the personal and professional challenges experienced, and the need for effective communication between teaching-team members to improve the learning environment. While some teachers reported disappointment at the loss of spontaneity in responding to students, there was evidence that the improvisational theatre format invited and supported student interactions with teachers and the topic.

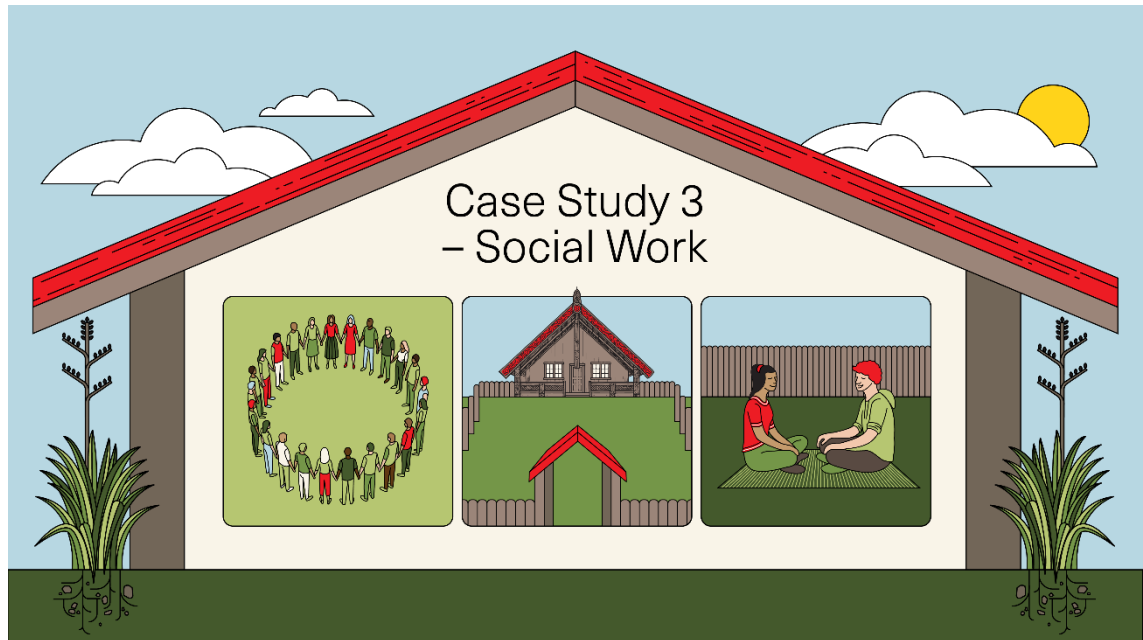
The findings indicate a desire for interactions with teachers and peers, however the requirement for physical isolation during lockdown periods had a moderating effect on the ability to maintain connections. This is an interesting aspect; with the widespread use of mobile phones, social media and technology, there are increasingly greater opportunities to maintain connection.

Across this case, students appeared to appreciate the design for learning that supported them in the context of their personal circumstances as they had the freedom to create a learning pathway aligning with their interests and clinical learning experience foci. In contrast, academic staff identified the benefit of a consistent approach, supported by predictable design formats, stable learning resources, continuity of staff, and effective communication to enable current and

new staff to develop a clear understanding of course content that incorporated effective design for learning strategies.

The findings suggest productive, hybrid learning environments can be created through planned and thoughtful curation of content alongside purposeful structure and modular formats to construct a stable learning environment able to weather societal and global challenges. The next chapter explores productive learning occurring within a hybrid social work course. Observations occur during a face-to-face, overnight live-in noho marae learning environment.

Chapter 7. Case Study 3: Indigenous Learning Practices



7.1 Introduction

Case Study 3 – Social Work presents a social work course founded on a te ao Māori worldview and *kaupapa* (foundation) with the design for learning incorporating indigenous ways of knowing and being. Fifty-nine students were third year and mostly enrolled in the Bachelor of Social Work with a few students (unknown number) completing a social policy major. This distance course had been redesigned by the course coordinator (P1) prior to the Covid-19 pandemic.

In the course redesign P1 noted a deliberate intent to celebrate Māori culture and take a strengths-based approach to Māori people and culture. It is well known that racism continues to exist in healthcare organisations in Aotearoa New Zealand with Māori unfairly discriminated against. The course begins with students reflecting on their own culture and positionality “So who are you?” (P1) before exploring Māori culture and how “Māori fit” in Aotearoa New Zealand within current political systems and healthcare policies.

This design for learning strategy challenges students in the first four weeks of the course to consider racism, white privilege and identities.

“you call yourself a Kiwi? Do you call yourself a New Zealander?... if so, Why? [If] your heritage is overseas... why aren't you looking at that?” (P1)

The course includes a three-day, live-in noho marae (overnight stay on a marae). The course coordinator provides context to assist students develop an awareness of the reasons Māori were protesting by giving a brief history of te Tiriti o Waitangi, Māori renaissance between the 1960s and 1970s and the protests, occupations and police raids in this period. This period was emphasised in this course with other decades of Māori development taking a central focus in other courses. Students are asked to consider these events, their identity and responses to past and current events. Students are introduced to a range of models used within Social Work practice and of particular relevance to tāngata whenua (Māori people). They are encouraged to use Te Whare Tapa Whā, “try it on themselves and work with it... then they gain confidence” within their social work practice (P1).

Analysis of this case study included data from the noho marae I attended to observe one group of students, artefacts within the course LMS site, and interviews with two students (SP 1 and SP2) and three social work academic staff (P1, P6, and P7). Findings from the case study have been previously reported in Green, Ruwhiu, Carvalho and Sheridan (2023) and is presented in this chapter.

This chapter explains the researchers' presence within the case study, provides a brief overview of the background surrounding the writing of the publication, and sets the scene for data collection. The publication follows. This chapter finishes with a synthesis of *Case Study 3 – Social Work* findings through the quintain as in Chapters 5 and 6.

7.2 Researcher Presence in this Case Study

In *Case Study 3 – Social Work*, I attended the noho marae and interacted with staff and students. P1 advised that to maintain the *kaupapa* (foundation) of the

noho time it was important for me to observe and be part of the activities to avoid a division with students. P1 was clear in describing the research project to the students in a LMS recorded video interview in the course site. I was introduced at the beginning of the noho marae and explained my research and presence over the following three days. P1 invited questions and gave students the opportunity to say if they did not want me to observe them. No students requested this. Along with observations of the noho marae, data were collected from the LMS course site and interviews with students and teaching staff (P1, P6 and P7).

My observations during the noho marae were analysed using a process of review and refinement by P1, P6 and P7 (see Appendix 8 analysis of the introductory 'mihimihi' teaching session). The data analysis approach included a refinement of the accuracy of details capturing the teachers' learning design intent in each session. Trustworthiness and validity of data analysis were evidenced through a process of repeated reviews by my supervisors (LC, NS).

7.3 Background to the Social Work Case Study Publication

The researcher and supervisors contributed a chapter to Learning Design Voices (2023) edited by Jaffer, Govender and Czerniewicz. The book is a compilation of innovation in blended learning design for teaching and learning practice, Chapters targeted innovation in local context-dependent higher education institutions.

Jaffer, T., Govender, S., & Czerniewicz, L. (Eds). (2023). *Learning Design Voices*. EdTech Books. <https://doi.org/10.59668/279>

I led the conception, development and writing of a chapter that synthesised aspects connected to this case study. Specifically, the chapter focussed on the productive, hybrid learning environment that enacted authentic pedagogies grounded in indigenous tradition, creating a space for reflection and transformation for health professional and graduate student practice.

Green, J. K., Ruwhiu, P. A., Carvalho, L. F., & Sheridan, N. (2023). Indigenous learning practices: Creating reflective spaces for growth and transformation. In T. Jaffer, S. Govender, & L. Czerniewicz (Eds.), *Learning Design Voices*. Ed Tech Books. [CC BY](#)

This was an opportunity to present a culturally authentic approach to decolonising the curriculum, learning environment and health professional education for practice. The publication examined the social work course using the ACAD Framework as a tool for analysis, identifying Set, Epistemic, and Social Elements and the resulting Emergent / Co-creative outcomes evident through discussions with lecturers and students and analysis of course artefacts. The published chapter discusses the benefits of incorporating indigenous practices in higher education learning environments within the health profession rather than a specific discipline. The publication was written for an international audience with potentially limited knowledge of Aotearoa New Zealand with te reo (Māori language) explanations provided for context. The teaching team (P1, P6, and P7) were participants in this research and their tangata whenua perspectives on indigenous ways of knowing and being were crucial to maintaining authenticity. Their insights guided refinements in the observation protocol and in the analysis and interpretation of the noho marae learning activities (described in Chapter 4 Methodology - Section 4.2.5 and see Appendix 8). P1 had social work knowledge and embedded cultural knowledge within this discipline. To maintain the anonymity of this author we removed any reference specifically identifying them. We acknowledged their contribution in confirming accuracy of events and through critical review of drafts. The chapter represents a culturally grounded, social work case study.

7.4 Indigenous Learning Practices: Creating Reflective Spaces for Growth and Transformation (Book chapter)

7.4.1 Abstract

Western ways of “knowing” and “being” have dominated higher education for many centuries, contributing to the perpetuation of existing practices and voices within political and economic systems. In higher education / university / wānanga contexts, there is a need for learning design approaches that invite

educators and learners to engage in diverse knowledge practices other than those associated with Western traditions, especially for learners who would benefit from education grounded in indigenous learning practices. This chapter focuses on a course that is founded on an indigenous te ao Māori worldview to illustrate the significant learning that can occur in an authentic, locally situated and context-specific practice environment. Its learning design showcases a way of decolonising the curriculum, learning environment and health professional education and practice. Interviews and observations with teaching staff and students informed the analysis of this hybrid learning environment. Taking an ecological approach grounded in practice theory, the analysis draws on the Activity-Centred Analysis and Design framework to examine how an assemblage of elements (including tools, tasks and social design elements of the course) influences its emergent activities. Four distinct learning activities from the noho marae (overnight stay) are described and evaluated using a learning design framework through an iterative process of “zooming in” and “zooming out”. The chapter provides operational details for learning design and argues that authentic, locally contextualised, culturally respectful learning practices can be highly effective for learners and their subsequent graduate practice. This design is in alignment with UNESCO’s Sustainable Development Goals (SDGs) of good health and well-being (SDG3) and quality education (SDG4).

7.4.2 Introduction

The United Nations (UN) Sustainable Development Goal (SDG) number 4 centres on “ensuring inclusive and equitable quality education” to support learning that improves societies (United Nations, n.d.; United Nations DESA, 2021). In this chapter, we argue that in order to address “inclusive and equitable quality education”, learning experiences need to be relevant to all learners, not just to those from a dominant group. This calls for learning designs that address and develop culturally meaningful learning opportunities.

This chapter focuses on a case study extracted from a larger, multiple case study investigating the design of productive, hybrid learning environments in a university in Aotearoa New Zealand. The term “hybrid” is used to denote the

incorporation of a variety of digital and material elements, coexisting in varying configurations within postdigital designs for learning (Fawns, 2019; Goodyear, 2020).

The case described here involves a course founded in te ao Māori (see glossary), a Māori worldview that incorporates innovative use of learning design, including curated forum discussions and “he rangitaki” (reflective online journaling) within a learning management system (LMS), as well as a nohoanga marae (Walker, 2012) – a face-to-face, overnight marae-based, live-in environment that provides the setting for learning activities built into the course design. This case illustrates how the richness and breadth of knowledge, social norms and cultural practices can enhance learning environments, and argues that this can positively influence graduate practice. The use of authentic pedagogies that are grounded in indigenous traditions allow cultural traditions to be maintained in higher education settings and can have significant beneficial impacts on the academic journeys of all learners.

In this course, which is part of an undergraduate programme within the health and wellbeing disciplines, the lecturer embedded principles in the learning design to decolonise the curriculum and the learning environment, as well as education and practice in the health profession. Interviews for this study were undertaken by the first author with the lecturer-designer, teaching staff and students along with data from which were combined with observations of learning activity in digital and physical spaces. Findings revealed key elements of learning design that allowed the course to be fully contextualised and relevant to learners in Aotearoa New Zealand.

The chapter discusses some innovative pedagogical strategies, such as the learner considering “Ko wai au? Who am I?” in relation to understanding their place within a wider context, engaging with their line of descent traced back from an ancestor, and viewing decolonisation through the lenses of Tangata Whenua (people of the land) and Tangata Tiriti (people of the Treaty of Waitangi) in a safe and supported learning environment.

Overall, this chapter examines core design elements that seem to support the enactment of authentic, locally contextualised, culturally respectful learning practices in a university course. These operational elements can contribute to highly effective learning practices and beyond; that is, not just for higher education / university / wānanga learners, but also in their subsequent professional practice, thus embodying the UNESCO SDGs of good health and well-being (SDG3) and quality education (SDG4).

The next section introduces the analytical lenses used in this study. Then, a short overview of the Aotearoa New Zealand context and te ao Māori (the Māori world) are provided before the discussion of specific learning sessions. We conclude the chapter with recommendations for learning design that aim to support authentic, locally contextualised, culturally respectful learning practices, and our areas for future research.

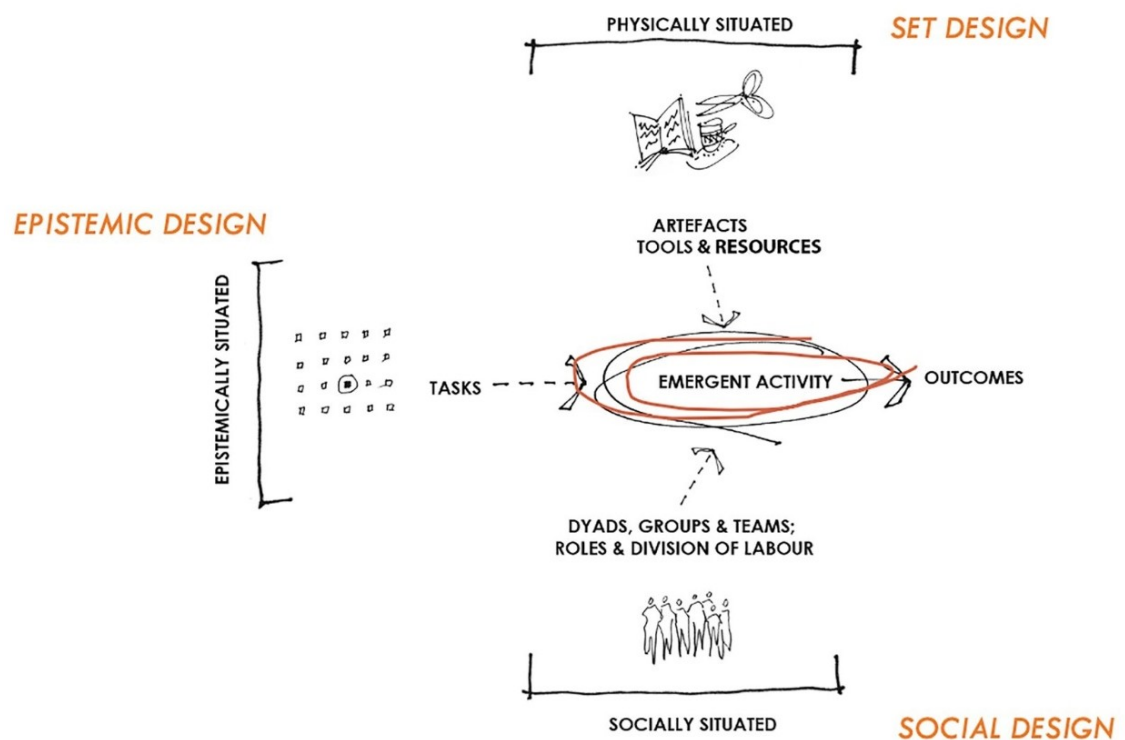
7.4.3 Analytical Lense

The analysis of this hybrid learning environment takes an ecological approach, grounded in practice theory. Drawing on the Activity-Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014), the analysis identifies core design elements in the course which seemed critical to the unfolding authentic, locally contextualised, culturally respectful learning activity.

ACAD differentiates between “designable components” (or the components that are open for changes through design), and those that are not (such as the emergent activity of students) (Goodyear & Carvalho, 2014). Designable elements are represented by the epistemic, set and social design dimensions of the framework (see Figure 7.1). Epistemic elements revolve around the organisation of knowledge, the sequencing and pacing of information, and the resources that are provided for meaning making. Set elements refer to items, such as physical and digital tools or artefacts that are present in a learning situation, including how elements may be positioned within a learning space. Social design considers how learners are organised, and may range from individuals, pairs, triads, small groups, classes or entire cohorts. The coalescence of these three designable aspects supports co- creation of

knowledge at learn time, when learners interact with the specific assemblage of elements put together by their lecturer. This last aspect is an important feature of this framework, in that those who design for learning cannot fully predict or control what might occur when a specific group of learners comes together in a specific learning context. Lecturers can however – through their design decisions – nudge learners in certain directions. They do so through their choice of elements in epistemic, set, and social design.

Figure 7.1
The ACAD Framework



Note. Adapted from Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (p. 59). Routledge. <https://doi.org/10.4324/9780203591093>

In order to theorise the relationship between design elements and emergent practices, four distinct learning activities from the noho marae are described with specific details outlining the learning design, intended outcomes and analysis of a session using a learning design observation template adapted from Fawns et al. (2021) and the iterative process of “zooming in” and “zooming

out” (Goodyear, 2020; Nicolini, 2012). The process and focusing questions are provided in Appendix 8.

Walker (2012) has emphasised the importance of the way in which guest observers understand themselves when entering indigenous spaces. An observer from a culture different to that of a case study could misinterpret the significance of what they observe. Walker argued that the researcher should allow their perspective to be informed by those of the culture in which the case is situated. It is essential for Tangata Tiriti researchers to acknowledge guardianship, rather than ownership of analysis of this course’s design for learning. The research team includes Tangata Whenua and Tangata Tiriti investigators and this chapter is written in consultation with the Tangata Whenua course designer-lecturer. Consultation with collaborators steeped in te ao Māori knowledge seeks to balance the potential risk of overlooking significant cultural interpretations.

7.4.4 The Aotearoa New Zealand Context – Tangata Whenua and Tangata Tiriti

Aotearoa New Zealand is distinct from other countries in regard to Te Tiriti o Waitangi and The Treaty of Waitangi. The intention of this agreement was the formation of a respectful bicultural partnership; however, these historical documents are regarded as a current social contract that strengthens relationships between Tangata Whenua and Tangata Tiriti (Ruwhiu, 2019). Te Tiriti o Waitangi was signed in 1840 by 42 Māori chiefs and a British Crown representative. Over the following four years, Te Tiriti o Waitangi travelled from one end of the country to the other and was signed by 513 male and 13 female Māori chiefs by 1844. It outlines the relationship between the two tangata and guarantees the rights of Māori and the responsibility of the British monarch (Wilson et al., 2021).

Tangata Whenua refers to the people of the land as the first arrival people in Aotearoa New Zealand. Tangata Tiriti denotes the people of the Treaty, referring to the second arrival people in Aotearoa New Zealand, who signed a treaty with Tangata Whenua in 1840.

Despite the good intentions outlined in the agreement, Māori have had to continuously and increasingly challenge institutional racism and the effects of colonisation throughout Aotearoa New Zealand, particularly since the late 1980s in respect to the policies of the government and its institutions (Ramsden, 1993; Walker, 1986). This is evident in both the education and health systems. At present, the Waitangi Tribunal are investigating more than 200 claims accusing the Crown of operating a sick, racist health system that fails Māori. The Health Services and Outcomes Kaupapa Inquiry (Claim WAI 2575) at Tūrangawaewae marae in Ngāruawāhia heard from claimants, some of whom were health professionals, that Māori die earlier and suffer worse health outcomes than other ethnic groups (Waitangi Tribunal, 2019). The effects of 181 years of control by the Crown has resulted in marked social and health disparities (Came et al., 2020).

Māori continue to experience the intergenerational effects of colonisation and discrimination. It is through partnership that understandings are cemented and actions that build equity for Māori in social and health systems are taken. It is the everyday work of health practitioners and others that contribute to this agenda. This case is centred on mana enhancing practices, which respect a person's authority and status, and recognises the centrality of emotions, reflection and spirituality within te ao Māori. It is through acknowledgement of the consequences of colonisation and by a deliberate effort to develop a partnership based on understanding that health practitioners (and others) can develop respectful interactions with people seeking healthcare support (Ruwhiu, 2019).

7.4.5 A Course that Enacts te ao Māori Worldview

This course is part of an undergraduate programme within the health and wellbeing disciplines at a university in Aotearoa New Zealand. Students are distributed across many geographical locations within the country. The course is offered as a third-year, 12-week (mostly) online course and caters for around 60 students. It involves one lecturer and two supporting teachers. Students start the course with four weeks of asynchronous, online learning and then meet in person for a nohoanga marae weekend learning experience. The remaining

weeks of the semester are delivered asynchronously, online. Ethics approval for this research requires that specific details about the participants, courses and university remain anonymous. We differentiate the participants in this research by referring to the lecturer and course designer as “Kaiako 1”, the supporting teachers as “Kaiako 2” and “Kaiako 3” respectively, and the student participants as “Student 1”, “Student 2” and “Student 3”.

Te ao Māori (the Māori world) is evident throughout the learning design of this course. The course environment includes both physical and online components. The course website on the LMS (the “Set design” component in the ACAD framework) is organised according to weekly topics, each of which begin with an introduction to the topic, its *kaupapa* (underlying foundations) and relevance with images to support the narrative. There is also a *karakia* (prayer) and a *whakatāuki* (proverb), written in Māori and English and narrated in Māori by Kaiako 1 on audio, as well as a short video presentation by the Kaiako 1 and a variety of resources in different mediums (written, video, images) for course participants to access. Figure 7.2 is a screenshot from the LMS course site.

Figure 7.2

Screenshot of the course site in the LMS



Karakia

Inā kei te mohio koe, kō wai koe

I anga mai koe i hea

Kei te mohio koe

Kei te anga atu ki hea

Amine



If you know who you are and where you are from then you will know where you are going.

**This can be used as a short karakia or you can also utilise it as a whakataukī. It has a strong message.

Whakataukī

Whaia te mātauranga, hei oranga mō koutou

Seek knowledge for the sake of your own wellbeing



These elements allow students to engage with indigenous ways of knowing and being from the very beginning of the course within the online environment, even before students arrive at the physical, marae learning space. They seem to somehow set the tone, for what is to come and introduce students to Māori aspirations for society and, more specifically, for health and well-being services.

Thematically, the course is divided into three sections (*Epistemic design*): *Ko wai au?* (Who am I?); *Ko wai koe?* (Who are you?); and lastly, a space to consider what has been learnt. *Ko wai au?* encourages each student to gain an

understanding of who they are in Aotearoa New Zealand as they learn more about historical discourses and the Māori renaissance. This is the first kete (basket) of knowledge, introduced via the LMS and lays a foundation for the second experiential kete of learning, during the noho marae (overnight marae stays) event. Throughout the noho marae each of the kaiako share their knowledge and experiences, considered a taonga (treasure), with students who gain a deeper understanding of Māori concepts and practices. The third kete of knowledge brings the many threads of the course together and students are able to reflect on what they have learned.

The concept of whanaungatanga (connectedness, establishing connections and relationships) is essential for te ao Māori and is enacted through different design elements. For example, at the beginning of the course, Kaiako 1 creates a forum space (*Set design*) for peer-to-peer connection and discussions. This comes in the form of a task (*Epistemic design*) where students, who usually know only a small number of others, are prompted by questions, facilitating their connection with others:

So, what did you think of the learning package? And what are some of the highlights, or what are some of the challenges in that space there? So, it's all kind of designed to be interactive.
(Kaiako 1)

There is also careful consideration given to how to keep the group connected. For example, if there is insufficient activity on the forums, Kaiako 1 delays introducing the next topic because her *kaupapa* (foundational principle) requires that “we all move together, move forward together. No one is left behind” (Kaiako 1). This is a te ao Māori value, grounded on the importance of the collective, where being still and waiting allows for others to catch up – and for all to move together as a group (*Social design*). Kaiako 1 reported that this focus on the collective allows students to engage and expand their ideas, building on each other’s contributions. This is seen in the kaiako’s recollection of student forum posts:

I’m really addicted, like I can’t wait to get up in the morning to see, to read all of the posts, ... read all of the forums. The other thing is they are... creating their own resource. So, it’s expanding

their critical thinking where one peer puts up this and the other peer puts up: “Wow, I never really thought of it like that!” So, they’re building that “Oh okay. I can think of it like this” ... they’re sharing experiences as well. (Kaiako 1)

Whanaungatanga allows for connections between students and teachers. In Western contexts introducing oneself is important, but the concept of whanaungatanga within te ao Māori goes deeper than an initial introduction. It is about acknowledging connections to the present and the past, physical and spiritual. This stands distinct from higher education contexts with an emphasis on transactional rather than transformative relationships between learners and teachers.

Throughout this case, there are many examples of co-construction of knowledge. Within te ao Māori, the concept of ako (to teach and to learn) represents the reciprocal nature of learning for both the student and the kaiako. An exchange from learner to teacher and teacher to learner is demonstrated as an “ako” interchange. For example, connections with Kaiako 1 are established in a weekly reflective journal called “He rangitaki”, written by the student and responded to by the kaiako. The term “He rangitaki” is used to describe the reflective state. These include personal reflections on the weekly topic, including reflecting on experiences, feelings and emotions. The rangitaki are not marked for a grade but are instead assessed on words of encouragement, wonderment and support are given to the learner. In what follows, we examine four learning sessions that foreground some of the core principles in the course.

7.4.6 Whanaungatanga

The concept of whanaungatanga (connectedness) is an essential starting point in the noho marae and extends the online connections made in the previous four weeks via the LMS (*Set design*). About 30 students brought bedding into the wharenuī (large meeting and sleeping space) and set up their sleeping space before undertaking the first learning activity. This was led by one of the three kaiako (teachers) and took place on the marae ātea, the grassed area in front of the wharenuī (*Set design*), which is an important and traditional welcoming space in whanaungatanga.

The intention of this activity is to decrease anxiety when meeting others for the first time (*Epistemic design*) and for it to be an enjoyable experience. Creating connections between learners who may have interacted in online forums but who have not met in person is important. Whanaungatanga helps to establish a shared sense of belonging within the group. Attending the noho marae – being in a traditional Māori space in a supportive environment – allows students to challenge themselves and be challenged by others.

And I think, don't be nervous, for the foreigner. You will know much, much more than you expect, or that the other students expect. There's quite a lot of information about the Māori people, about Māori culture, so it all just opens up your mind. Go to the marae and don't be frightened and then at the beginning, I feel like "Oh my God what's the marae look like? What can I do in the marae?" I know nothing. So, at the beginning I'm so frightened. But now, I want to say to other people, to other students, "Don't be afraid, just open your mind, you will learn." (Student 1)

The initial task is undertaken by students in groups of 12–15 (*Social design*) and is based on where students are living during the semester. Each group forms a circle, a collective rhythm is established by two thigh slaps and two hand claps, then one person starts by inserting their name and an action, while maintaining the rhythm. Each person in the group includes their name and action and repeats the names and actions of all those who have gone before them. There is much hilarity, and at times frustration, as the pattern is broken and the group must start from the beginning again. These "errors", however, provide opportunities to learn by practicing each other's names. The activity is relaxing, fun, energising and creates an excellent platform for the start of the workshops.

Well, for me, as an internal student, it was the first time I'd meet any of the distance students ... it was a really fun easy way to just take the edge off a bit because being around a bunch of new people, even if it is all lovely ... students it is always going to be terrifying. Especially in a place that is not somewhere I would normally be. (Student 2)

The association of an action with a person's name serves as a memory aide throughout other noho activities. Each group is challenged to create a short performance that represents their geographical region. Performances are

presented on the first evening before each person recites their mihimihi (to acknowledge the manawhenua, the people of the marae) and their pepeha (an introduction about their connections to family, locations, the environment and spiritual elements that establish connections between the visitor and the people of the marae).[2] Standing to say their mihimihi and pepeha, each person is supported by their group of peers and this collegiality shows the development of tangible connections, which is a key outcome of this activity. The assemblage of elements within the design for learning coalesces to influence the emergent activities. The activity in the digital environment (*Set design*) plants the seed for connections to be established (*Social design*), but it is within the marae (*Set design*) that these connections are deepened and strengthened so that a sense of conviviality and belonging can emerge, reflecting continuity between what students experience as part of their interactions in the digital and the physical settings.

Whanaungatanga is centred on connections and early on in the noho there are formal introductions. Students are provided with links to resources to help them prepare their mihimihi and pepeha ahead of time. Preparation enables students to connect with their ancestral history and during the noho marae many students commented on the significance of this for them personally. Throughout the whanaungatanga activity on the first evening, the manawhenua (marae hosts) are continually making connections between the details that each student is communicating about their ancestry, heritage and the geographical places they have connections with.

Some of the emergent, undesignable aspects in this learning activity, as understood by Goodyear et al. (2021), can be seen in the development of a sense of belonging and collaboration. Students exercise their autonomy, for example, by using their preferred social media app to connect with each other while they are travelling to the noho marae; the use of their preferred device, app or software to develop their mihimihi and pepeha; and in the collegiality that is evidenced in the giving and receiving of acknowledgements that occur during mihimihi introductions.

This was the first noho that this teaching team had facilitated as a group. There had been discussions, meetings and plans made in preparation for this event. During the sessions, the three kaiako were “checking in with one another and noticing the levels of energy, noticing group dynamics ... Working together collectively as a tight teaching group” (Kaiako 1). As the kaiako became aware of changing energy, they “huddled” to review the dynamics and to re-design in the moment. The term “huddling” was used as a cue to find a quiet space and debrief about the previous activities, notice any student of concern and plan or adjust the activity coming up. Essentially, the huddle is designed to regroup and give the kaiako a chance to catch up, re-evaluate, ensure that students who may need following up with are identified, and prepare for the next activity or workshop.

7.4.7 Aotearoa Identities, Racism, Privilege and Historical Trauma

Acknowledging personal privilege, cultural identity and heritage are key to understanding the position that a health professional holds in a therapeutic relationship with a person seeking healthcare (Ramsden, 1993). The design of the task described in this section addresses this theme. Similar to the previous task, this task connects and extends themes that have been introduced within the online environment by way of video presentations, historical documents, news reports and forum discussions (*Epistemic design*). During the initial four weeks of the course, Kaiako 1 foregrounds literature and other sources of knowledge relating to historical trauma as a result of colonisation to heighten the learners’ awareness of significant events that have shaped Aotearoa New Zealand identities.

The task builds on whanaungatanga (connectedness) as students reflect on some of the initial course concepts (*Epistemic design*) in pairs or triads (*Social design*). Kaiako 3 takes the group outside and using ngā rakau (wooden poles, 1.3m in length) (*Set design*) speaks in te reo Māori, demonstrating a series of actions with the rakau that greet components of the marae and of the environment that nourishes us. The students then move to a smaller space and stand shoulder to shoulder holding their rakau in front of them (*Set design*). Following the instructions of Kaiako 3, they move either their rakau or their

position in the circle, leaving the rakau where it is. Not following instructions or dropping the rakau leads to exclusion from the circle. Both of these activities are linked to the “space” each individual occupies, symbolising privilege, inclusion or exclusion from the group (*Epistemic design*).

Because this was the first time we can (sic.) utilise this format, and the first workshop of the day, the plan was to ... further whanaungatanga development amongst the students. This is why we first sat down to discuss some of the concepts within the learning packages, before going outside. (Kaiako 3)

The kaiako explained that the purpose of this task was to heighten the students’ spatial awareness, their position within space, and to potentially raise awareness of an unconscious bias towards privilege. Students’ experiences were expanded in subsequent group discussions, where they worked through feelings and emotions in relation to these concepts and the relevance of this experience to prior course content (*Emergent / Co-creative activity*).

Growth doesn't happen in comfortable places. ... my role ... was to push, push, push, push students, a little bit outside of the comfortability zone and evoke emotions as well and help them to critically think ... it's not to say that I have all the answers, because I know myself that I don't have all the answers. (Kaiako 3)

A student participant acknowledged the positive outcomes of the challenge: “[I]t was uncomfortable but in a good way as well you know. It's good to be uncomfortable, we need to have these uncomfortable conversations to move forward.” (Student 2)

Throughout this session, the kaiako was observing, acknowledging group dynamics and responding to specific aspects: “I was recognising the differences within the groups and saying okay, what is another strategy I could utilise to bring out or make the learning more applicable to the respective groups”. (Kaiako 3)

The inclusion of visual, auditory and kinaesthetic elements in this session foregrounds a design for learning that is inclusive of a variety of learning modalities that when combined contribute to each person’s learning, deepening their understanding of the importance of health contexts, finding connections,

being aware of the influence of privilege, and showing respect when working alongside Māori.

7.4.8 Decolonisation – Mana Enhancing Practice

A significant concept discussed in this course is decolonisation. Initial course resources and tasks present key information on Aotearoa New Zealand's historical and recent colonisation experiences (*Epistemic design*), and the influence of the Māori renaissance in responding to these experiences. In acknowledging these realities as a basis for this session, Kaiako 1 emphasises decolonisation as “a process by which people peel away the psychological and spiritual effects of colonisation through a facilitated journey of learning the truths of their history” (Bell, 2006, p. 14).

Kaiako 1 asks students to consider the impact of colonisers on Māori, knowing that for each student their ancestors may represent colonisers and/or the colonised. To acknowledge the feelings and emotional responses that may be elicited, the kaiako creates a physically and spiritually safe environment within the wharenuī that recognises the sacredness of the space and the presence of tūpuna (ancestors), both in the images that adorn the walls and within the memories of past and present. Kaiako 1 provides a workbook, prepares the learners with a whakataukī (proverb) “Hikitea te ha”, which represents the breath (to breathe in and to breathe out). This helps to connect students with the environment through deep breathing: to connect with the earth, to create a safe place to be vulnerable and for spiritual elements to be acknowledged (*Set design*). Kaiako 1 notes that:

[T]his physical space was very important, to get the full effect they needed to be in a place that is sacred, reverent and holds the mana of the marae. The whare is that place which opens up the portals of emotions. (Kaiako 1)

Such design for learning infuses personal and spiritual aspects which reach beyond cognition and content towards a holistic approach to learning and understanding.

Another task of connection was to ask the learners to choose a space they preferred inside the wharenuī and to compose a letter to their tūpuna, view them in their mind's eye, and express their feelings (*Epistemic design*).

Before discussing what they had written with a peer (*Social design*), the kaiako introduced “Mana Enhancing Practice” which centres on engaging with a person through listening, understanding and respecting cultural differences (Ruwhiu, 2001; Ruwhiu, 2019). This practice involves initiating a conversation to identify and co-construct a space “between”, identifying behaviours and body language that indicate distress and preferred responses to acknowledge and provide support. This negotiated understanding creates therapeutic “rules of engagement” in which the learners can meet, share, listen and support each other during their conversation about their ancestors as they initiate restorative healing processes (*Epistemic and Social design*). The course workbook guides the learners through each of the aspects within this session.

During the observation session, the researcher (and first author of this chapter) noticed students commenting that as they were listening to peers' accounts of what they would say to their ancestors, they were at times upset, but the peer listener was able to recognise the distressed behaviour and to act in a way that the sharer had indicated was appropriately supportive. And then students reflected, and wrote, and spoke of their ancestors.

This was connecting to their inner self but knowing that their ancestors and tūpuna were present and they could call on them and have a conversation with them. It then led into having conversations with each other... and thirdly, connection with the environment was an important grounding activity. (Kaiako 1)

This session illustrates a design for learning that supported spiritual, emotional and conversational learning outcomes that were personally and professionally significant for the learners. With Aotearoa New Zealand being a bicultural country, the opportunity to understand Māori and non-Māori cultural values and practices within higher education courses allows graduates to develop knowledge that will help them to respectfully support and care for ethnically and culturally diverse populations. Mana enhancing practice acknowledges the personal, spiritual and natural influences on a person. It enables a co-created,

safe, therapeutic space within which the person seeking help identifies what is culturally appropriate for them and guides the health professional in how to best support their health and wellbeing (Walker, 2012). Indigenous-oriented design for learning brings a richness of knowledge and understanding that has validity for learners and teachers within a primarily monocultural learning landscape.

7.4.9 Te Ao Māori Worldview – Pā Harakeke Framework

The course design also includes Harakeke, a metaphor used by Māori for whānau (wider family), which signifies collective wellbeing and protection. The Harakeke plant (Figure 7.3) has the three central fronds representing the rito (child) at the centre, with awhi rito (parents) protecting on either side, and tūpuna (grandparents) as the outer leaves providing protection, shelter and support for whānau (Watson, 2020; Wilson et al., 2021). In Aotearoa New Zealand, the Pā Harakeke framework has been used within supervision and counselling, where the person seeking help is acknowledged as the rito. Within te ao Māori, there are tikanga (correct cultural practices) around harvesting and use that ensure the health and wellbeing of people and of the harakeke plant.

Figure 7.3

The Harakeke Plant (New Zealand Flax, Phormium Tenax)



Kaiako 2 introduces learners to the Pā Harakeke by way of a karakia (prayer) and a waiata (song), combined with hand and arm actions to represent components of the plant (*Epistemic design*). The kaiako suggests that learners consider applying the model to their personal health and wellbeing as a way of becoming familiar with the model that they might later use in practice.

The design of this task includes time for describing and viewing workbook diagrams of the harakeke plant, including the ground and stones around the roots which can signify challenge and strength, and their influence on plant health (*Epistemic design*). The whole group is then invited to go outside to look at harakeke plants growing around the marae. They are asked to form small groups around the garden to examine specific aspects of the plants and to make comparisons between harakeke plants in different locations (*Social design*). The whole group then gathers to review what they have observed. The kaiako encourages them to look at the many different components of the harakeke plant and the differences in the health of plants in different locations – analogies for people seeking healthcare, their whānau relationships and the environments within which they are living (*Emergent / Co-created outcomes*). The group acts out each of the components of the harakeke plant, identifying which part of the plant they are signifying and then describing their thoughts and feelings about their role within the ecosystem.

Key aspects of the design for learning in this activity include: the harakeke plant as a learning “tool”, the experiential and “hands-on” nature of being out of a classroom, interacting with the environment and interacting with their small group. The use of Pā Harakeke as a metaphor and model for whānau work, combined with various activities including waiata, hand and arm actions, discussions, field work in examining plants and their habitats, and the embodiment of harakeke, culminate in deep learning and the application of a model for graduate practice.

The kaiako facilitated this session three times and noted that each group brought differing levels of energy. This allowed her to “work to the group strength, e.g., the quiet group were deeply reflective whereas the more outgoing group [included] bigger personalities [who] are happy to ‘act out’ and do things differently”. (Kaiako 2)

Course participants represent a diverse range of learners, who will soon graduate, and support the health and wellness of people from multicultural backgrounds in Aotearoa New Zealand. Indeed, the experiential learning that has occurred through this course seems to significantly contribute to the development of students' personal and professional practice, as some of the student quotes illustrate:

I just feel like we explored so much. Not just in terms of learning stuff but spiritually as well ... the introduction of Pā Whakawairua which I've actually used as part of my self-care plan for placement. So, will be using that moving forward. So, exploration of self, but also of your place in New Zealand society and me specifically being Tangata Tiriti, what that means for me and my practice. (Student 2)

The learnings were amazing, had some tangitangi (enlightening) moments when things came to light through this course. Looking back to move positively forward for the now and future generations of our people is the goal! (Student 3)

Overall, the hybrid design of this course allows for multiple elements, such as audio, video and text-based elements that can be used effectively in the online environment; it also retains the key aspect of kanohi ki te kanohi (face-to-face) in the flesh within the noho learning experiences. In addition, Kaiako 1 highlights the influence that this course can have on graduate practice outcomes:

So, if you're comfortable in who you are, where you come from, your cultural positioning inside Aotearoa, your obligations and responsibilities to Te Tiriti o Waitangi, then that's a huge foundation to be able to go out and help others. (Kaiako 1)

7.4.10 Recommendations for Hybrid Learning Environments

The case presented here illustrates how educators might include indigenous principles as part of their learning designs. This is particularly important for teachers in indigenous or bicultural contexts, where considering traditions, values and cultural practices might similarly be incorporated to ground teaching activities into authentic, local and context-relevant, learning environments.

For this course, noho marae attendance is a requirement of the degree and of professional registration. As such, Covid-19 restrictions might necessitate postponement of this activity until physical distancing requirements cease. However, in other learning contexts, if a move to online delivery is necessitated due to the pandemic restrictions, the following suggestions below provide alternatives to capture elements of experiential learning from this course.

- **Plan for introduction activities that allow students to share a little bit about themselves** – for example as an introduction forum or an online bulletin board linked to the LMS (“Some things about me ...”).
- **Consider the space that your activity could take place in** – which environment would be conducive to wellbeing? For learning? Plan for alternatives depending on, for example, the weather.
- **Look for opportunities that support learners to experience the concepts** – for example, by provoking emotive responses, creating visual memories, providing learning opportunities that move beyond reading a text or watching a video or listening to an expert.
- **Create elements for virtual learning** – with the use of video tours and live, wearable webcams, one person could visit a site (e.g. a harakeke plant) and the learner observers could direct where the person with the webcam goes via a live stream video platform.
- **Consider altering the social design of an activity to accommodate online breakout rooms for discussion** on key points.
- **Develop online brainstorming activities** (e.g. JamBoards, Miro Board) to bring together feedback from learner breakout rooms and support a whole-class discussion.
- **Consider what concepts have already been presented and discussed** – what variations in set, social or epistemic design could you make in a “review of the concepts” activity?
- **Work collectively as a teaching team** to support in-the-moment responses to changing dynamics within the learning environment.
- **Consider a “Plan B” with an alternative Set** – and how elements in social and epistemic design can still be responsive to the learning situation to support a rapid pivot.

7.4.11 Conclusion – Book Chapter

Western ways of “knowing” and “being” have influenced higher education for centuries and contribute to perpetuating particular knowledge practices. There is, therefore, an urgent need for alternative learning designs that honour indigenous ways of knowing and being, and which invite educators and learners to engage in diverse practices. In this chapter, we have argued that authentic learning experiences need to be relevant to all learners, not just to those from a dominant group, and we have illustrated how learning design can address and develop culturally meaningful learning opportunities.

The analysis in this chapter showcases a hybrid learning design, grounded in an authentic Māori context. The chapter discusses key elements of learning design that allow students to experience learning activities as fully contextualised and relevant to learners in Aotearoa New Zealand. Core pedagogical strategies, such as the learner considering “Ko wai au? Who am I?”, allow students to develop a deeper understanding of their place within a wider context, engaging with their line of descent traced back from an ancestor, and to view decolonisation through the lenses of Tangata Whenua (people of the land) and Tangata Tiriti (people of the Treaty of Waitangi) in a safe and supported learning environment. Such examples suggest ways in which indigenous knowledge can surface through learning design, ensuring inclusive and equitable, quality education that is more likely to support diverse practices and contribute to more inclusive societies. Future work will continue to analyse design features that contribute to productive learning in hybrid learning environments within higher education.

7.5 Summary of Chapter - Social Work Quintain

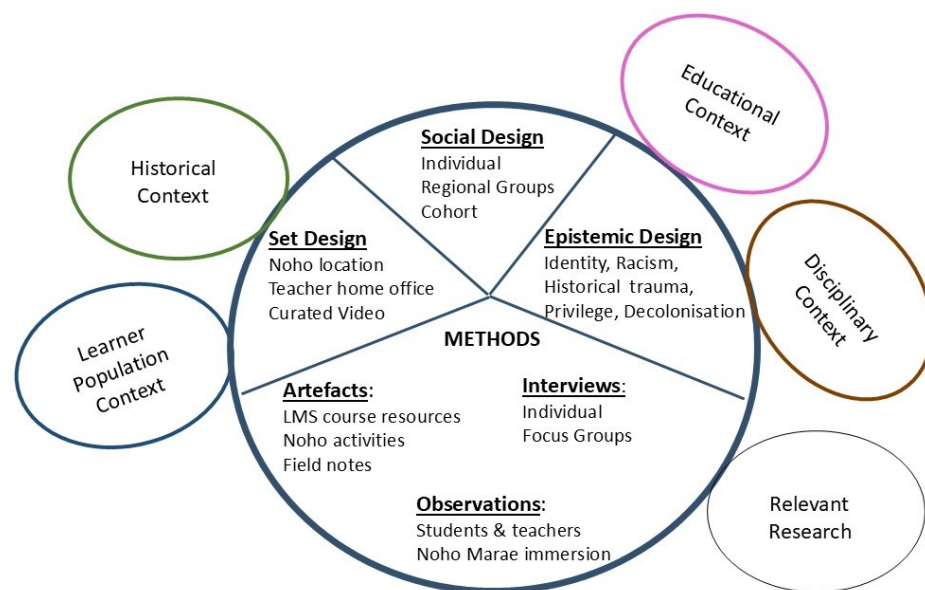
This chapter advances the investigation of productive, hybrid learning environments by presenting indigenous, Māori learning practices in the context of marae-based learning. By creating spaces for reflective growth and transformation in student perspectives and practice, this learning design advances the call to recognise the far-reaching benefits of incorporating

culturally authentic, inclusive education to enhance preparation for graduate and professional practice.

In contrast to the two previous cases, the course in this case was able to proceed with the design for learning intact and unaffected by Covid-19 restrictions. This included asynchronous delivery of content through the semester, followed by a synchronous, in-person noho marae experience. The case study quintain (see Figure 7.4) guided collection and analysis of data within the course LMS, throughout the noho marae proceedings and in the interviews with teachers before and after the noho marae, and in the student focus group discussion after the noho experience.

Figure 7.4

Case Study 3 Social Work Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

Note. Refer to 4.2.1 for overview of Quintain structure

Course content included Aotearoa identities, decolonisation, with learners considering who they are, and what they would say to their ancestors. For those students who were not of sole Māori descent their ancestors were both colonisers and those who were colonised. During this activity, students considered rights-based professional practice and how they might enact the

human rights principles of human dignity with people in their care in a mana-enhancing way.

The chapter presented a course that was founded on te ao Māori principles and indigenous learning practices. The chapter directly contributed to a broader view of productive, hybrid learning environments by addressing the research questions: What are the characteristics of productive, hybrid learning environments in higher education health contexts? How do students and academic staff characterise productive, hybrid learning activities within HLE? And how do learning design elements, in HLE, influence and support student experiences?

The research findings across the three design aspects indicated Set design was the most effective when it embedded te ao Māori principles of whanaungatanga (creating connections) and ako (reciprocal learning between students and teachers) in experiential learning activities incorporating environmental and wairua (spiritual connection) aspects and acknowledging the role of these in planetary and personal wellbeing. There was a clear focus on reflecting on learning for professional growth. Epistemic design was successful when it was scaffolded and asynchronous delivery of content was extended in synchronous sessions and conveyed learning concepts through karakia (prayer), waiata (song), physical actions, conversations and observations. Social design was effective when it used fun, repetition, was relaxing and energising, acknowledged challenging personal experiences and enabled peers to support each other in mana-affirming ways (listening, understanding, respecting cultural differences).

Themes related to students and teachers who indicated a willingness to embrace culturally respectful and inclusive practices while acknowledging individual challenges. In response to this, Kaiako (teachers) were continuously checking student energy levels and group dynamics to proactively redesign in the moment.

Across the case, the issues that emerged as shaping productivity included the physical marae location; a clear sense of whanaungatanga to welcome and

include students from diverse cultures, backgrounds and locations; and acknowledgement of the potential for transformative professional growth when learning incorporated an understanding of patient health and wellbeing in relation to the environment and ecosystem.

The findings collectively suggest productive, hybrid learning environments are evident when authentic, locally contextualised, indigenous knowledge practices are embedded into design for learning in higher education professional courses. The three design elements coalesced to support emergent, co-created outcomes for students to attain professional graduate practice.

The following chapter focuses on the cross-case analysis and discussion of all three case studies in this research.

Chapter 8. Discussion

8.1 Introduction

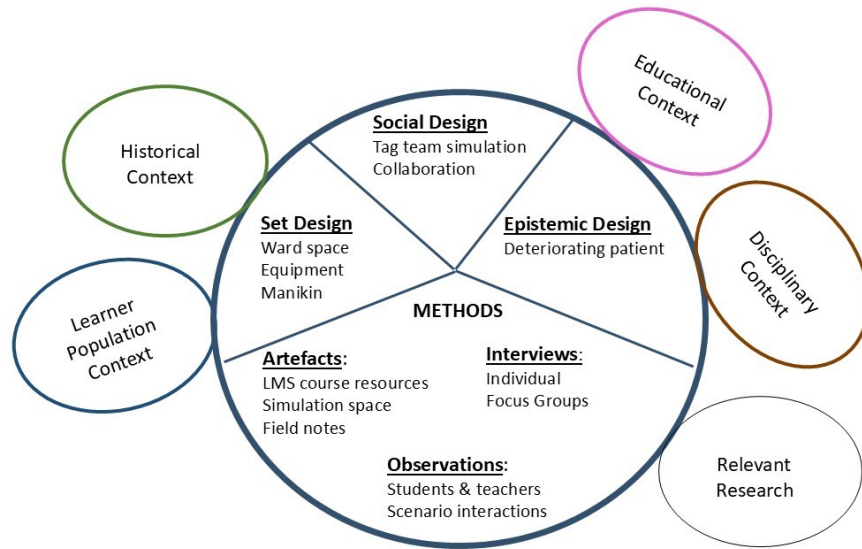
This chapter discusses the research findings and draws on literature that has been reviewed. The cross-case analysis approach taken to interpreting the findings enabled similar patterns to be understood and differences between the three cases (CS1 Nursing; CS2 Pharmacology; CS3 Social Work) to be more deeply explored and interpreted. The overarching synthesis supports coherency in understanding the characteristics necessary to develop and maintain productive hybrid learning environments in higher education health. The cases, their contexts and specific quintain contextual influences have been considered. The need for productive hybrid learning environments in healthcare courses in Aotearoa New Zealand and beyond is argued on the basis of new research findings providing compelling evidence.

8.2 Quintain Contextual Influences on the Case Studies

The quintain has guided the research and analysis (see Figures 8.1, 8.2, 8.3) and provided a framework for identifying and assessing the key elements in each of the three cases. An awareness of the historical, educational, discipline-specific or learner-related factors influencing the periphery or broader context within which the research is situated was maintained.

Figure 8.1

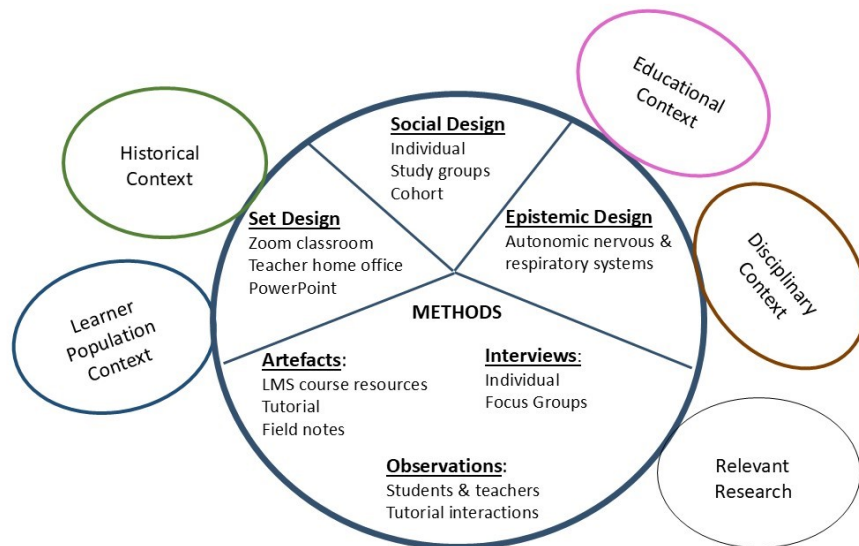
Case Study 1 Nursing Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

Figure 8.2

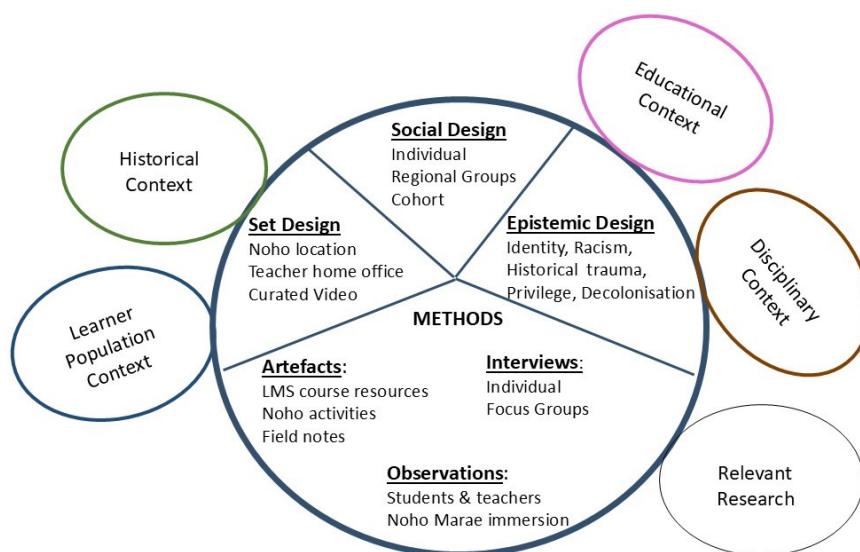
Case Study 2 Pharmacology Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

Figure 8.3

Case Study 3 Social Work Quintain: Productive Hybrid Learning Environments



Adapted from: Stake (2006)

Historically, clinical learning experiences in all professional healthcare courses in Aotearoa New Zealand have scheduled planned dates and times determined by regional healthcare authorities. As a result, the structure of healthcare courses typically accommodated professional practice weeks. This was evident in the nursing course (CS1), however the social work course (CS3) occurred prior to the clinical learning experiences which were scheduled in subsequent semesters. In contrast, the pharmacology course (CS2), which included nursing and other health science students, had always followed a 12-week semester timetable independently of the clinical learning experiences.

Typically, clinical learning experiences occurred at similar times year-on-year in a semester. However, as students in these cases were based in three regional locations, the weeks for clinical learning experiences seldom aligned across the whole student cohort. It became apparent that a rigid, sequential calendar format in the pharmacology course (CS2) had resulted in some students missing large amounts of content during full day workshops because they were absent from campus completing clinical learning experiences. This issue students faced in pharmacology combined with Covid-19 requirements required a course redesign.

All three cases had similar educational contexts with clear foci on preparing students for graduate practice. Design decisions to include learning resources in practice settings enabled this goal. However, educational contexts differed. In CS3, the course was designed for distance delivery allowing learners to stay in their regions and traveling for a two-day, marae-based experiential learning component. In CS1, the course was divided into three-blocks of on-campus theory and simulation labs. The purpose was to provide key knowledge and skills necessary for clinical learning experience blocks. The modular, redesigned format of the CS2 course provided a stable delivery despite differing clinical learning experience requirements and Covid-19 restrictions, and offered greater flexibility increasing student agency and a reduced need for staff travel between campuses.

The disciplinary context necessitated students in healthcare professional degrees developing knowledge and skills in safe and supported, realistic, learning environments. The intent was to maintain the safety of people seeking healthcare while the students were guided in providing effective care in preparation for graduate practice. During clinical placements, students are mentored by facility registered healthcare professionals and supervised by university-appointed staff.

Table 8.1 summarizes the historical, educational, learning design and disciplinary contextual influences across all three cases.

Table 8.1

Contextual Influences Within and Across Case Studies

Context	Historical	Educational	Learning Design	Disciplinary
CS1 Nursing	Influenced by clinical learning experiences	Preparation for graduate practice	On-campus & clinical learning experiences	Mentored & supervised by RNs
CS2 Pharmacology	Followed 12-week structure		Modular design	Professional support for student development
CS3 Social work	Prior to field education experiences		Distance & marae learning experience	Supervised by registered professionals

The following section provides an overview of each case and reflexivity across cases before discussing the multiple case study findings as a whole and integrating these into the broader body of design for learning research.

8.3 Case Portraits

Case Study 1 focuses on a year three Bachelor of Nursing course featuring a combination of asynchronous and synchronous design for learning including an observed simulation session. These students ($N = 152$) and teachers ($N = 3$) located across three geographical regions had experienced significant periods of differing Covid-19 lockdowns during which travel was restricted, and no on-campus teaching was permitted until just before the simulation session occurred. Teachers had managed a rapid pivot to fully online delivery; students and staff were navigating personal, family/whānau health, sickness, wellbeing and educational challenges; and clinical learning experiences had been disrupted and were challenging with unwell patients, potential for transmission of Covid-19 to healthcare staff, changing healthcare protocols as new information came to light, and students required to don a N95 mask for an entire shift. Among these complexities, teachers adjusted to changing dynamics to facilitate student learning (See Appendix 9 Multiple case study analyst notes on this case).

Case Study 2 focused on a year two Bachelor of Health Science asynchronous pharmacology course and observed tutorial session. This course was transformed to provide flexible access for 175 students to accommodate changing clinical learning experience requirements for most students ($n = 172$) who were in the undergraduate nursing programme. Course design facilitated all students' access to the learning materials through changing levels of Covid-19 lockdowns occurring between August and December 2022, and through the variations of access to clinical learning experiences during the semester (See Appendix 9 Multiple case study analyst notes on this case).

Case Study 3 focused on a year 3 Social Work course with mostly asynchronous learning and the inclusion of a face-to-face, overnight, marae-based, live-in noho marae experience. The students ($N = 59$) mostly engaged

with the course coordinator asynchronously through the learning management system during the initial four-weeks of the semester as they completed learning materials and discussion forums. For the two consecutive noho marae offerings, the cohort was divided into two-groups. Observations occurred in one of these noho marae learning events. The timing of this course was in the first semester of 2021. Although there were Covid-19 lockdowns during the semester, restrictions had been lifted in time for the planned noho marae, resulting in limited disruption to the course's learning design and delivery (See Appendix 9 Multiple case study analyst notes on this case).

8.4 Cross-Case analysis

While there can be an impetus to find similarities across the cases, Stake (2006) emphasised the importance of identifying their differences. He highlighted the importance of examining cases to establish their unique situational characteristics. The previous three chapters explored the unique characteristics of each case framed as a quintain. To synthesise and augment understanding in cross-case analysis, Stake recommended returning to the original thesis research questions for examination of aspects most prominent in the data from the cases. Through analysis and interpretation of these findings I can meaningfully respond to my overall research question: What are the characteristics of productive hybrid learning environments in higher education undergraduate health contexts? I can respond also to my research sub-questions: How do students and academic staff characterise productive learning activities within hybrid learning environments? How do learning design elements, in hybrid learning environments, influence and support student experiences?

In what follows, the cross-case analysis discusses commonalities and differences across cases and then interprets their meaning and implications for the design of productive, hybrid learning environments in higher education undergraduate health contexts.

8.5 Cross-Case Patterns of Similarity

The similarities between the cases centred primarily on course design and the teaching teams' ability to work synergistically, collaborate and effectively manage issues that arose. Participants across the cases reflected on the importance of supporting students throughout their learning by providing rich learning experiences mirroring experiences typically found in professional practice. The principles of effective learning design (Goodyear, 2020) were evident in the three cases. This is consistent with courses developed with significant learning designer input and which are required to meet standards set by the regulatory professional body.

8.5.1 Course Design – The Importance of a Consistent and Predictable Format

Cross-case analysis found productive, hybrid learning environments had a consistent and predictable format (*Kaupapa*) which signposted key information to guide learners through the course content. Across cases, courses included activities to prepare learners for key aspects commonly organised by topic within the Learning Management System (LMS) and typically included interactive activities, videos, and media publications. These types of artefacts and guiding processes that aligned with findings from Bridges et al. (2020), Plaza del Pino et al. (2022), and Reid-Searl et al. (2019) appeared to prime learners to reinforce existing knowledge or to start creating knowledge before applying it in groups or as a whole cohort. Additionally, as contended by Hase and Blaschke (2021a), the incorporation of curated content purposefully placed within a course supported student agency and application of knowledge beyond the initial learning context.

Digitally-mediated course design effectively supported meaningful interactions between students and teachers. In CS2 teachers anticipated a loss of tangible connection with students due to the move from full day workshops to asynchronous delivery. However, six months later in the observed tutorial, spontaneous connections were evident in the text chat, audio and video interactions. Similarly, in CS3, the kaiako (lecturers/teachers) design for learning intentionally included ice-breaker activities to leverage off preexisting

student peer connections and to initiate group formation for the remaining noho marae activities. These findings are supported by Jenssen et al. (2024) who scheduled group times and faculty checkpoints to connect with students, and Fox and O'Maley (2023) who provided intentional support for learners in problem solving and reflective group critical thinking.

All cases suggest purposeful course design and experiences of shared engagement can ameliorate and overcome potential challenges in relational connections.

However, participant data highlighted a clear risk to effective course design in relation to 'content creep' whereby new content is included in a course without consideration for why, how and where it fits, and of the impact on student workload if other course content is not consequently removed. Design decisions must be communicated clearly between teaching staff and presented during the induction of new teachers. The research found in all cases time pressure often prevented important team conversations and professional development preparation (Green, 2022). This points to a need, prior to the employment of new staff, for teaching staff to identify the knowledge, skills, teaching methodologies, and andragogical and heutagogical learning strategies used in a course. During the employment process, a prospective staff member could complete a self-audit to identify proficiency and opportunities for professional growth. As part of my journey in this research project, I became aware of the need for, and have developed a novel, self-auditing tool as a way to identify opportunities for targeted professional development for new staff in HE health contexts (see Appendix 10).

Another key idea in course design highlighted by participants was the importance of flexible design to support transitions to address Covid-19 requirements. Teachers recognised the need to prepare 'plan b' teaching options to facilitate in-the-moment responsiveness to emergent aspects occurring during digitally- mediated teaching sessions. One participant (P17) noted the latent risk to mistake purposeful design for a "Panic-gogy" (Kamenetz, 2020) mindset associated with a rapid pivot to fully digitally-mediated learning formats. This emphasises the importance of acknowledging and addressing

temporary challenges while consistently moving towards intentional hybrid learning design.

8.5.2 Teaching Team

The importance of effective teaching team collaboration was evident in all cases. For cases two and three, a consistent team teaching in the same location either co-located on campus or on Zoom demonstrated synergy. One participant likened the teaching team dynamic to spontaneous, improvisational theatre. Across cases, the collaboration within these teaching teams began with orientation and induction of staff to the design for learning.

In CS3, the team met for orientation immediately before starting the noho marae to discuss what was proposed. During the noho marae there were regular, impromptu 'huddles' to plan, discuss, evaluate and debrief learning sessions. In CS2, the rationale for location and inclusion of content and activities within the LMS was agreed by specialty-differentiated and geographically separated staff. This was essential to support cohesion and maintenance of design. For CS1, with a staff member new to coordination and novice sessional staff on other campuses, there was an imperative for induction and orientation to simulation pedagogy as a means to maintaining the integrity of course design.

These findings are consistent with those of Doran et al. (2022) who found teacher familiarity with pedagogy was imperative for effective implementation. Reid-Searl et al. (2019) emphasise the importance of educators having a clear understanding of the pedagogy to effectively guide and coach learners, and Esposito and O'Sullivan (2020) highlighted the need for faculty to have ongoing professional development to ensure they understand best practice.

In alignment with the literature review findings, academic staff in this research also acknowledged the challenge of learning and teaching remotely (Bennett et al., 2022). This included trouble-shooting technical and connectivity issues (Esposito & Sullivan, 2020), creating emotionally safe learning environments (Baixinho et al., 2022; Doran et al., 2022; Reid-Searl et al., 2019), and effectively assessing student competence for clinical practice (McGovern, 2019; Plaza del Pino et al., 2022; Rambaree et al., 2023). These aspects often

occurred in the moment as an issue became apparent. Participants noted pressure on available time had resulted in insufficient time for professional development on the use of technology in courses.

To support and enhance teaching competence and academic citizenship, teaching staff incorporated their own and other research into their courses (Green, 2022). This allowed staff to use research findings to develop evidence-based practice resources and, in so doing, effectively guide students in the use of resources within clinical practice settings.

8.5.3 Supporting Students

Throughout the cross-case analysis, the data indicated considerable benefit from providing tangible support for students. Taha Tinana, a pillar in the Aotearoa Design for Learning framework, represents the importance of support to provide a sense of safety for students who were feeling isolated, anxious, or challenged by life circumstances. Isolation was noted to be both physical and metaphysical with students no longer able to glance around a room for support, instead needing to scroll through small, often blank, participant tiles in a Zoom session. Bennett et al. (2022) also noted the effect of extended screentime on students' ability to focus. Students valued opportunities to develop tangible connections with each other and feel less isolated, which was achieved by being on campus or marae.

Students also expressed challenges in coping with the amount of coursework and managing completion dates. The resultant cognitive load was compounded by Covid-19 related anxiety and stress associated with challenges in managing personal, work and whānau responsibilities. Tabatabaee et al. (2024) suggest learning in challenging clinical environments can be effective when learning design strategies scaffold clinical knowledge content from simple to complex ideas and concepts and apply familiar scenarios and examples such as those evident in the three case studies. Scaffolding student learning processes was important and included recorded explanations of course material by teachers and established checkpoints in the intervals prior to assessment due dates.

These strategies seemed effective in supporting students to manage time and reducing course-related stress.

Challenges in accessing resources was multifactorial and extended beyond the course design to practical aspects of student support. Isolation was also evident in the technological challenges students faced in accessing and engaging with course materials and teaching sessions. For some students, lack of internet access or no available space at home resulted in less-than-ideal study locations such as sitting in their car outside closed university buildings (Czerniewicz & Carvalho, 2023). For others, challenges were a result of insufficient device size and capability. It was apparent that diverse access to course resources was a result of many factors and extended beyond course design to practical aspects of student support. The precarious nature of students' personal circumstances was found to influence access to learning, which was consistent with research conducted by Bennett et al. (2022) on housing instability, accessing course material from publicly available internet sources, and Zoom fatigue.

Interactions with teachers ameliorated some of the challenges. This was evident in the rapport between teachers and students, and in the shared and often spontaneous humour that occurred. Intentional efforts were made by teachers to incorporate student experiences and cultural knowledge. This aligns with research by Fox and O'Maley (2023) and Mattingly (2021) who suggested this type of teacher intent can support deep learning. Teachers made deliberate efforts in large cohort Zoom sessions to thank and name students who engaged in text and voice chat responses. These types of actions where students were acknowledged for their contributions would arguably help students feel they were 'seen' and valued by teachers. Additionally, teachers made concerted efforts to be approachable and embracing of student perspectives and contributions, striving to create physically and emotionally safe spaces for learning. Such strategies adopted by teachers supported students through diverse and often individual experiences and challenges.

The impact of Covid-19 resulted in students across these cases experiencing a variety of challenges including reduced mobility due to lockdown constraints (Bennett et al., 2022; Jenssen et al., 2024; Kumpula & Krumwiede, 2023);

reduced ability to engage in clinical learning experiences and campus-based labs (Esposito & Sullivan, 2020); video recorded sessions resulting in potential ongoing embarrassment of questions students asked (Bennett et al., 2022; Carroll & Morse, 2022; Mills et al., 2022); and managing personal and whānau/family Covid-19 related illnesses (Mills et al., 2022).

The literature and the current study findings confirmed targeted and deliberate support can create a sense of safety amidst isolation and anxiety. It can also provide a scaffolded approach to enhance clinical learning experiences and ameliorate some of the challenges students face with technology and engagement in learning sessions. However, the cross-case analysis identified additional challenges, such as students working part-time with extended hours in essential healthcare roles during the pandemic and being unable to attend teaching sessions. In addition, some students were homeschooling their children on top of their regular course work. These challenges required students to schedule their own learning around their children's learning and impacted their ability to complete coursework.

8.5.4 Characteristics of Effective Teaching and Learning for Graduate Practice

Preparing students for graduate practice is a key focus in each case. Typically, preparation occurred by incorporating resources used in practice settings, including realistic and complex simulations or scenarios which mirrored professional practice situations. In addition, emphasis was placed on experiential learning that applied theoretical concepts and knowledge to the provision of healthcare by these students. The inclusion of varied learning resources and experiences was discussed by participants as being key to effective learning for graduate practice.

Teacher participants consistently noted the importance of using frameworks, documentation and equipment commonly encountered during clinical learning experiences. Student participants also reported developing knowledge and skills while using resources to plan and document care. These findings confirmed the importance of learning in preparation for graduate practice that

reflected current clinical practice contexts as reported by Esposito and Sullivan (2020); Kumpula and Krumwiede (2023); Moore and Campbell (2021).

Preparation for graduate practice was consolidated through learning events incorporating opportunities for practice to develop proficiency, noted for example by Reid-Searle et al. (2019) in relation to increased confidence in providing intimate patient care as a simulation progressed. Proficiency development was seen in CS1 during the cyclical simulation phases; in CS2 with the repeated exposure to, and use of, the New Zealand Formulary online tool to find details of medication administration and management; and in CS3 where the students provided and practiced mana-enhancing interactions with a peer.

Learning activities requiring completion within realistic time periods assisted students to develop organisational and time management skills, such as the deteriorating patient simulation (CS1). This enhancement was consistent with research findings reported by Carroll and Morse (2022) and Moore and Campbell (2021) where time-pressures supported clinical realism as students worked collaboratively in complex professional practice scenarios.

A key finding similar across the cases related to the professional growth of students. This was about the inclusion of activities that challenged students to equip and support incremental development of knowledge and skills in preparation for graduate practice. The interactive nature of simulations (CS1) and experiential learning (CS3) pushed students out of their comfort zone, evoking emotions and the challenge to think critically. Students recognised certain learning events were “uncomfortable but in a good way” (SP2). Similarly, it was noted that questioning prompted and stretched students’ thinking to promote deep learning. These findings in the present study align well with Esposito and Sullivan (2020), Plaza del Pino et al. (2022) and Reid-Searl et al. (2019) who noted the benefits of simulations to challenge thinking by using a combination of pre-briefing, briefing, simulation, debriefing to augment and synthesise learning.

However, the emotionally charged nature of these experiences required recognition of the potential for anxiety and stress in simulations and acknowledged the imperative to provide a safe place to make mistakes safely while avoiding patient harm (Carroll & Morse, 2022; Esposito & Sullivan, 2020; Plaza del Pino et al., 2022; Reid-Searl et al., 2019). This was evident when a CS1 participant highlighted the importance of maintaining a balance between positive challenge and providing support to students who experience anxiety as they develop knowledge and skills.

In summary, it is within the Emergent / Co-creative, non-designable elements of the cases that synthesis of learning is evident. The coalescence of knowledge and experience gained through teaching, the resources used, varying learning experiences, and collaborations with peers and healthcare professional colleagues in practice environments, informed students' clinical decision-making and professional practice development. Student participants expressed satisfaction in their growing awareness of professional capabilities. Opportunities to develop their meta-cognitive critical thinking through intentional challenge was seen by students and teachers as necessary in the development of confidence in clinical decision-making and in their professional practice. The next section will explore some of the key differences in the findings of the cross-case analysis.

8.6 Cross-Case Key Differences

Stake (2006) emphasised the importance of consideration of the differences between cases to also gain a more nuanced understanding of a complex social phenomena under investigation. During cross-case analysis, three key areas of difference became apparent in the broad categories of design for learning, the teaching team and support for students.

8.6.1 Course Design

Each course design brings together an assemblage of multiple elements. However, when the ecology of a learning environment is disrupted, course design may require adjustments or redesign. For example, by enabling a flexible delivery, structure and engagement, educators may have increased

capacity to adjust to unpredictable or necessary emergency changes. Potentially, the primarily asynchronous format in CS3 provided a more flexible design for learning enabling it to proceed as planned. This flexibility, in the end, did not influence the noho marae activity since there was a lifting of travel restrictions prior to scheduling the noho marae which allowed students to travel to the lower North Island location.

Similarly, the flexible asynchronous course design in CS2 afforded students agency to create bespoke content completion timelines to align with their personal circumstances. As noted earlier, this proved invaluable when Covid-19 lockdowns disrupted much of Aotearoa New Zealand and restrictions were in place in the Auckland region from August until December 2021. There was obvious benefit in a design for learning that could accommodate changes to government-mandated societal and health restriction policies.

While flexible course design enabled both CS2 and CS3 to proceed as planned, CS1 presented very differently. In contrast, CS1 course design did not afford flexibility when a rapid pivot was required. The required Covid-19 related changes necessitated a redesign of learning sessions and ongoing uncertainty for the potential to meet in-person or be co-located on campus for simulation labs. These redesign challenges were also encountered by Bennett et al. (2022) and Esposito and Sullivan (2020) in their discussion surrounding rapid pivots. Across the three case studies, it became apparent that a hybrid, modular format can provide continuity of learning in a stable and predictable manner while empowering student agency, flexibility of access to learning resources and enabling responsiveness to societal challenges such as Covid-19 restrictions.

8.6.2 Teaching Team – Cross-case Differences

Although the cross-case analysis identified common themes around teaching team consistency. Significant differences between cases appeared in the importance of ongoing effective communication and the challenges of teaching at distance with limited pedagogical knowledge or professional development. A key difference between cases was the prior experiences of, and involvement in,

team teaching. The most experienced and stable team was CS2. Staff had worked together over several years and, in the revised modular course design format, each staff member had contributed to the development of specific content modules. In the observed session, one person taught the topic tutorial while another managed the Zoom meeting platform and monitored the text chat. Their verbal interactions worked synergistically to support student knowledge acquisition and augment the learning environment.

CS3 drew together people who had worked together previously in other aspects of the degree but this was the first time they had collaborated and delivered a noho marae as a group. Each individual took responsibility for preparing, delivering and debriefing specific activities which students rotated through in small groups. Then they collaborated in whole group activities such as the evening mihimihi (introductions), the welcome from the marae kaumātua (elders), and the final debriefing session. The frequent teaching team check-ins were similar to the collaborations undertaken by Kumpula and Krumwiede (2023) where regular debriefings, reviews, planning and discussions supported effective co-teaching, even by distance.

This suggests ongoing communication and debriefing is key for teaching teams to set the scene for productive learning environments. However, team communication does not guarantee pedagogical effectiveness, which can also be influenced by teaching staff's breadth of skill and experience. CS1 had a staff member experienced in learning delivery but new to coordinating the course who had never facilitated this particular simulation and debriefing. During the semester, they were supported by two new staff members, each separated geographically by campus. None of the teaching team had seen the proposed simulation session in-action and professional development was limited to one, online meeting to review the planned, on-campus simulation. They each delivered the simulation for the students on their campus. During the CS1 observation of the nursing simulation, only the observed campus teacher was supported by a non-course teaching staff member who managed the technical aspects of the manikin's deteriorating vital signs. The other campus teachers facilitated their simulations on their own. Carroll and Morse (2022)

noted that staff who are unfamiliar with teaching strategies, such as this planned simulation, tend to stay with what they know and may avoid the risk of designing or facilitating new learning experiences. This highlights the importance of providing targeted professional development to staff so they are familiar with, and able to facilitate with confidence, new learning strategies for students.

Teaching staff in CS2 and CS3 were able to share the workload whereas in CS1, the course coordinator took on most of the organisational and planning workload and was supported by the new staff as their contract hours permitted. This appeared to be a large, additional commitment of time for this coordinator with limited opportunities to plan or consult for a rapid redesign. Sudden transition in course design was also identified by Bennett et al. (2022) and Esposito and Sullivan (2020) who noted limited capacity for specific staff development.

While each of these cases involved variations in teacher involvement and support, it was apparent there was a willingness to try something novel; to plan and organise beforehand but simultaneously acknowledge the improvisational aspects that emerged in teaching moments. These teachers modelled 'daring to try'. They did not know the outcome and were often surprised by positive outcomes - despite not feeling in control of what was occurring. This was a clear example of Emergent knowledge as outlined in the ACAD framework where teachers created a design for learning that nudged learners in a hoped for direction without confidence of what outcomes might emerge through the co-creation of knowledge.

8.6.3 Supporting Students

Support for students was essential in all learning but differed in format across cases, depending on the learning design. In CS3, the specificity and relevancy of support was evident in the first four weeks of fully online delivery. The designed opportunities for support, through engagement in learning activities, included purposefully waiting for all students to complete one module before moving on to the next where "no one is left behind" (P1). This support aligns

with te ao Māori values, grounded on collectivism – to move forward as one, demonstrating support for all students. In addition, at the beginning of the noho marae where the learning design included co-located, live-in, experiential learning, the group activities were designed to build on and support connections that had begun in the first four weeks of LMS online activities. Many students had not previously met in co-located physical campuses. The experiential activities developed by the Kaiako (lecturer/teachers) enabled students to feel tangible support and connections as they continued through the noho sessions. Student participants reported their experience during the noho built on the whanaungatanga (connectedness) that had begun in the initial weeks of the course. These design elements seemed to have been carefully crafted to honour indigenous principles for learning.

In contrast, the CS2 course had been specifically designed for flexible delivery, providing students with agency to access content modules in an order and time suiting their personal schedules. This design feature provided autonomy in learning choices and supported students heutagogically (Blaschke et al., 2021). Heutagogical design empowered students to create non-linear learning pathways, helping these students to accommodate significant and diverse disruptions for their planned clinical learning experiences.

Conversely, effective support for students in CS1 was challenging. This related primarily to a design for learning centred on co-located, on-campus teaching using specialised equipment which afforded minimal flexibility. This case was characterised by a rapid, emergency pivot online in response to Covid-19 lockdown restrictions and throughout the semester the course coordinator was unsure if on-campus sessions would be possible. As such, it was a semester of constant transition due to the unpredictable and changing Covid-19 restrictions, combined with the need to reconfigure a hybrid learning design which included redevelopment of learning materials for fully online synchronous and asynchronous delivery. Student participants also noted the loss of collaborative conversations due to the absence of on-campus labs. The resulting lack of flexibility in this course's design for learning had the potential to diminish productivity.

The CS1 teaching staff were concerned about how best to provide tangible support to students who had disruptions to clinical learning experiences, were caring for people with Covid-19, and were wearing N95 masks and personal protective equipment for shifts as they provided nursing care to seriously ill people. In addition, these students experienced stress related to the risk of becoming infected with the virus, the potential of transmitting the virus to their whānau (family) or close contacts, in combination with technical challenges and the cognitive load of learning in a fully, digitally-mediated context. These experiences were underpinned by the uncertainty of when things would return to 'normal'. While support for these students was offered through university student care teams, there was a greater level of anxiety and stress for learners in the nursing and pharmacology cohorts. Creating culturally and psychologically safe learning environments enabled students to work through challenging experiences mentioned above (Bennett et al., 2022; Carroll & Morse, 2022) which are a key component of productive, hybrid learning environments.

Teachers in all three case studies identified the imperative to support students and colleagues navigating ever-changing societal and health circumstances. In addition, some teachers demonstrated flexibility and a willingness to traverse the unknown to adjust their course content and delivery to meet the needs of the learning environment in response to their student cohort.

Cross-case analysis of differences revealed flexible course design increased capacity to adjust to unpredicted or necessary changes. Conversely, inflexible design required significant redesign and limited the teaching staff's ability to effectively adjust to unpredictable circumstances. There was also a clear benefit to having an experienced and stable teaching team who could work synergistically and capitalise on their teaching strengths. However, when this was not possible, strategic and supportive leadership and team collaboration could compensate in areas of challenge. The findings acknowledged the imperative of teachers' pedagogical knowledge, skills and prior experiences in creating stable teaching and learning environments. An essential characteristic of co-creation and emergence was teacher willingness to innovate and

improvise in teaching sessions. Finally, this cross-case analysis of key differences between the three cases highlighted the importance of providing varied and intentional levels of support to students, recognising the unpredictable challenges they might face, and giving students agency to determine a personalised, non-linear pathway through the learning environment and content.

8.7 Synthesis of Cross-case Analysis and Discussion

This research has sought to understand what characterises productive, hybrid learning environments in higher education health contexts in Aotearoa New Zealand by incorporating aspects of māoritanga and Te Whare Tapa Whā. In the course of this research, the preliminary design principles presented in Green et al. (2020) and in Chapter 7, (Green, 2022) have been revised through careful analysis and interpretation of findings of all three cases and in the cross-case analysis. I now propose 11 design principles to inform the design of productive, hybrid learning environments in health education. The first principle refers to using **consistent, stable, predictable formats (*Kaupapa*) in course design**. This includes design elements signposting key information and structured guidance to learners. Having clear and clean layout is a well-researched principle for website design of a course (*Set design*), where navigation and layout should subtly guide and not overwhelm a learner (Carvalho & Saunders, 2018). Such consistent, stable and predictable structure can also be crucial in terms of sequencing and pacing information to learners, for example through resources that will guide learners through key ideas (Epistemic design; Mayer, 2014).

The second principle highlights the importance of providing **curated content to support agency and application of knowledge beyond the initial learning context**. Enabling students to have choice in what, when and how they engage with learning activities is a key precept of heutagogy (Blaschke et al., 2021; Hase & Blaschke, 2021a). Purposeful selection of teaching content and realistic activities provided opportunities for students to contribute to the learning of their peers through problem solving and critical thinking which prepared students for

the reality of professional clinical contexts and graduate practice (*Emergent / Co-creative learning, Taha Hinengaro*).

The third principle identifies the foundational influence of belonging and connection with peers and teaching staff. **Purposeful course design and shared engagement can ameliorate relational connection challenges.** The profound influence of conviviality in learning (Social design, Taha Whānau; Illich, 1973) and convivial technologies (Set design, Taha Tinana; Gourlay et al., 2021) has long-lasting effects on enjoyment of learning, memory, and development of trusting relationships that can enable students and staff to navigate challenges (Social design, Taha Whānau; Emergent learning, Taha Hinengaro; Reid-Searl et al., 2019). When faced with challenges, humour and a shared sense of being in the moment with each other supported tangible engagement and connection (Fox & O'Maley, 2023; Green et al., 2023; Moore & Campbell, 2021).

The fourth principle highlighted the benefit of a course design format comprising **hybrid, modular formats which can provide continuity of learning responsive to societal challenges.** Changes in societal, educational, health or personal circumstances for teachers or students requires a flexible response in teaching and learning (Set design, Taha Tinana; Epistemic design, Taha Wairua; Carroll & Morse, 2022; Esposito & Sullivan, 2020). Such flexibility is exemplified in hybrid modular course design formats. Adjusting content delivery for student group or staffing requirements, or reconfiguring teaching resources and supporting hybrid learning environments, enables productivity.

The fifth principle focuses on the teaching team and notes the importance of **teachers who communicate effectively and work collaboratively**, so they can **synergistically capitalise on individual strengths**. When staff or students are regionally or internationally dispersed, effective communication supports engagement (Egonsdotter et al., 2020). Effective communication within teaching teams is influenced by the length of time the team has worked together and the levels of experience with teaching modalities (Social design, Taha Whānau; Green et al., 2023). There is a clear advantage for teaching teams with consistent staffing. For those with newer or less experienced staff,

effective communication and collaboration capitalising on staff expertise are markers of productive, hybrid learning environments.

An essential sixth principle for productive, hybrid learning environments centres on the **support of teaching staff through targeted professional development (PD)**. The depth of pedagogical awareness has been identified as a key component of course design implementation (Doran et al., 2022; Reid-Searl et al., 2019). Identification of individual PD needs can be facilitated using a self-audit during staff orientation and induction (see Appendix 10) and might include coaching on best practice, IT support, or video tutorials (Esposito & Sullivan, 2020). Enabling staff to identify and develop teaching skills specific to hybrid learning environments, contributes to productivity.

The seventh principle is foundational in creating a **sense of community and safety to support students to navigate unexpected challenges**. This points to the influence of course design on socially mediated relationships. During the data collection period, there were multiple, unanticipated challenges that arose from the Covid-19 pandemic (Social design, Taha Whānau; Carroll & Morse, 2022; Doran et al., 2022). Tangible connections can be intentionally developed and facilitated by teaching staff to create productive, hybrid learning environments irrespective of the cause of the disruption.

Additionally, the efforts of teaching staff to **intentionally support students by developing rapport, valuing student contributions and providing practical support** is the eighth principle. Course design can incorporate opportunities for teacher engagement to offer student-specific interactions. In the literature, this involved teachers memorising and addressing students by name (Social design, Taha Whānau; Woodley, 2020), including activities that built trust (Taha Tinana; Kumpula & Krumwiede, 2023), and subliminal development of relationships as peers offered support (Reid-Searl et al., 2019). Key to these outcomes is teacher and pedagogical intentionality for the learning environment to be productive.

For support to be appropriate, timely, relevant and safe for students, principle nine notes the importance of providing **intentional variations in levels of**

support to build connection and to create a culturally and psychologically safe learning environment. This refers to the importance of course design providing nuanced support for students and enabling teachers to be responsive to student needs. Teachers can create a culturally safe learning environment through initiating deliberate and empathetic interactions (Social design, Taha Whānau; Bennett et al., 2022) and by establishing guiding principles of engagement (*kawa*) whereby students can interact with each other, sharing their perspectives and experiences without fear of shame or risk of embarrassment (Taha Tinana; Carroll & Morse, 2022). Course design can lay the foundation for this; teachers can craft it into reality.

Principle ten focuses on the imperative to **mirror aspects of clinical settings with interactive, experiential activities that challenge students and evoke emotions through collaboration and critical thinking.** These aspects are particularly important for design elements preparing students in healthcare professional degree contexts (Baixinho et al., 2022; Carroll & Morse, 2022; Moore & Campbell, 2021). Novice graduates will also be registered by a professional body and as such will be expected to apply their critical thinking and clinical reasoning skills to patient care (*Emergent / Co-creative activity, Taha Hinengaro*). Therefore, productive, hybrid learning environments in HE health contexts will include practice as students in scenarios, activities and situations that mimic reality in preparation for graduate practice (*Set design*).

Principle eleven highlights the importance of scaffolding in learning to **develop students' knowledge and skills through experiential learning and incremental application of theory into practice.** Building on students' prior knowledge is an essential part of constructing knowledge (*Emergent / Co-creative learning, Taha Hinengaro*; Reid-Searl et al., 2019), and designing learning to challenge students through incremental phases of growth can be transformative (*Epistemic design, Taha Wairua*; Doran et al., 2022; Mills et al., 2022; Tabatabaee et al., 2024). Scaffolding such as this is a key feature of productive, hybrid learning environments.

The following table (see Table 8.1) provides an overview of findings in the cross-case analysis and emerging principles of productive, hybrid learning environments in HE health contexts.

Table 8.2

Overview of Cross-Case Analysis – Synthesis

	Patterns of Similarity	Key Differences	PHLE Emerging Principles
Course Design	<ul style="list-style-type: none"> • Preparation of learners. <ul style="list-style-type: none"> ○ Commonly organised by topic ○ Interactive activities, media, publications • Support meaningful interactions. <ul style="list-style-type: none"> ○ Scheduled group times ○ Intentional support, teacher check-ins ○ Group problem solving, reflective and critical thinking • Communication of course design decisions and underlying pedagogy. <ul style="list-style-type: none"> ○ Induction of staff ○ The issue of time pressure ○ Self-audit of knowledge and skills proficiency (teaching methodology, learning strategies, andragogy, heutagogy) 	<ul style="list-style-type: none"> • Flexible course design increases capacity to adjust to unpredictable or necessary changes. • Inflexible course design requires significant redesign to adjust to unpredictable or necessary changes. 	<ul style="list-style-type: none"> ➤ Consistent, stable, predictable formats (<i>Kaupapa</i>) signpost key information to guide learners. ➤ Curated content supports agency and application of knowledge beyond the initial learning context. ➤ Purposeful course design and shared engagement can ameliorate relational connection challenges. ➤ Intentional, hybrid course design can transition course delivery and respond to emergent challenges. ➤ Hybrid, modular formats can provide continuity of learning responsive to societal challenges.

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	Patterns of Similarity	Key Differences	PHLE Emerging Principles
Teaching Team	<ul style="list-style-type: none"> • Consistency of teaching staff. • Ongoing, effective communications. • The challenge of distance and technology. • Lack of time for professional development. 	<ul style="list-style-type: none"> • Experienced teams can work synergistically and leverage staff strength • Effectiveness of new teams can be enhanced through regular and clear communication, leveraging strengths, reviewing, debriefing and engaging in ongoing conversations. • Pedagogical stability/ effectiveness is highly dependent on the teaching teams' knowledge, skills and prior experiences. • Ability to share workload <ul style="list-style-type: none"> ○ 2 case studies shared, 1 did not • Willingness to innovate and improvise <ul style="list-style-type: none"> ○ Can support co-creation and emergence of knowledge 	<ul style="list-style-type: none"> ➤ Teachers who communicate effectively and work collaboratively, and synergistically to capitalise on strengths. ➤ Support teaching staff through targeted professional development.

	Patterns of Similarity	Key Differences	PHLE Emerging Principles
Supporting Students	<ul style="list-style-type: none"> • Sense of safety. <ul style="list-style-type: none"> ○ Isolation leading to anxiety • Managing the amount of coursework. <ul style="list-style-type: none"> ○ See Tababtabaee (2024) scaffolding in clinical • Report supports learning, value student contributions, intentional support. • Challenges. <ul style="list-style-type: none"> ○ Decreased mobility with lockdowns ○ Decreased opportunity to engage ○ Recordings perpetuate potential embarrassment ○ Working with patients in precarious healthcare contexts, home schooling children, whānau health 	<ul style="list-style-type: none"> • Varying and intentional levels of support <ul style="list-style-type: none"> ○ Indigenous perspective of collective • Build on connections with tangible support • Student's autonomy, agency, empowered to create non-linear paths for their learning • Unpredictable learning contexts, challenging clinical learning experiences, health and whānau challenges, and technology challenges. <ul style="list-style-type: none"> ○ Can lead to greater levels of stress 	<ul style="list-style-type: none"> ➤ PHLEs create a sense of community and safety. This supports students to navigate unexpected challenges. ➤ Intentional student support develops rapport, values student contributions and provides practical support. ➤ PHLEs have intentional variations in levels of support to build connection and to create a culturally and psychologically safe learning environment.

	Patterns of Similarity	Key Differences	PHLE Emerging Principles
Characteristics of Effective Teaching & Learning for Graduate Practice	<ul style="list-style-type: none"> • Resources used in clinical settings <ul style="list-style-type: none"> ○ Clinical frameworks, documents, equipment • Experiential learning apply theory to practice • Scaffolded development of skills, nurtured, repeated practice <ul style="list-style-type: none"> ○ Incremental development of knowledge and skills • Realistic time constraints <ul style="list-style-type: none"> ○ Clinical realism • Interactive and experiential activities, questioning to promote deep thinking <ul style="list-style-type: none"> ○ This pushes students out of comfort zone, evoking emotions, and challenging students to think critically 		<ul style="list-style-type: none"> ➤ Mirror aspects of clinical settings with interactive, experiential activities that challenge students, evoke emotions through collaboration and critical thinking. ➤ Develop student's knowledge and skills through experiential learning and incremental application of theory into practice.

8.8 Understanding Productive Hybrid Learning

Environments in Health Courses

The social constructivist lens in this research values the essential role of the people involved and their perspectives and takes into consideration how they interacted with each other in their learning contexts. To gain a dynamic view of these contexts, an ecological frame of reference was essential, as it enabled the exploration of hybrid learning environments and their consideration as complex, enmeshed assemblages, which were evident in the nexus of people, technology, sociocultural and sociomaterial factors in postdigital HE learning contexts.

My understanding of the case studies, through the inductive analysis and interpretation of research data, was informed by networked learning (Hodgson & McConnell, 2019) and through the use of the ACAD framework (*Set, Social, Epistemic and Emergent / Co-creative activities*) (Goodyear & Carvalho, 2014), and Te Whare Tapa Whā (*Taha Whānau, Taha Tinana, Taha Hinengaro and Taha Wairua*) (Durie, 1985).

Within the theoretical framing of this research, a postdigital perspective allowed me to conceive digital technologies as an inherent part of people's everyday living (Jandrić et al., 2018). Digital technologies influence what people do and how people learn in health disciplines, through their engagement in simulation scenarios while in interaction with resources and peers in a LMS, or when confronting the difficulties to connect/download resources or access to devices during a pandemic. The adoption of a networked learning stance was crucial and helped me to conceptualise relations between multiple elements of a learning environment so I could search for relationships between people and elements in a course design as I tried to understand how these contributed to the emergent activity of students. The ACAD framework (Goodyear & Carvalho, 2014) provided a way to breakdown such complexity of learning situations in local contexts, foregrounding relations between dimensions of design and the learning activity that emerges at learn time. However, the ACAD framing alone did not consider cultural influences and perspectives. The Aotearoa Design for

Learning Framework has been developed as part of this research to incorporate the holistic elements of the Te Whare Tapa Whā framework (Durie, 1985) with the ACAD components and, in so doing, it provides a holistic view of teaching and learning in the Aotearoa context.

8.9 Summary of Chapter

This chapter discusses a cross-case analysis which identified four areas of similarity across the three cases. These are considerations for how the courses were designed, the way in which the teaching team collaborated and addressed challenges, the foundational need to support students throughout HE learning pathways, and the importance of learning experiences clearly linked to professional practice settings so that graduating students are well prepared for professional roles. The key areas of difference in these cases reflect variations in the design for learning as each course navigated specific disciplinary, historical and educational contexts. This encompasses design decisions to leverage hybrid learning capabilities, adjusting to rapid pivots in course design in response to changing Covid-19 restrictions, accommodating and adjusting to new staff with varying levels of skills and experience and differing abilities to maintain responsive support for students in hybrid learning environments. Through the cross-case analysis process, I have also identified key principles of productive, hybrid learning environments in HE health contexts in Aotearoa New Zealand.

The following chapter will present the thesis conclusions and recommendations for productive, hybrid learning environments in higher education health contexts.

Chapter 9. Conclusion and Recommendations

9.1 Introduction

Courses in higher education (HE) have been incorporating digital technologies for many decades. This study began with an interest in understanding what characterised productive learning environments, especially those involving the use of technology to enhance teaching and learning specifically within HE courses in health disciplines. In academic environments, a one size-fits-all approach to learners and learning has predominated despite programmes enrolling diverse domestic and international student populations (Aumua & Tominiko, 2016). Improvements in learning environments are related to the increasing portability of technology combined with the ability to adapt technologies to meet learners' requirements in varying settings such as health education. The potential for personalised learning empowering learners' agency to make choices related to their learning has become a realistic expectation. For all learners to be successful, their individual learning needs require innovative solutions that move beyond a one-size-fits-all approach.

The Covid-19 pandemic challenged the delivery of courses and programmes in higher education health contexts (Green et al., 2020; Hodges et al., 2020). This was apparent in courses designed primarily for teaching on-campus in co-located classrooms. As a result of pandemic restrictions on movement and gatherings, academics who were expert at delivering teaching sessions in traditional, on-campus formats were suddenly required to pivot their teaching to fully online course delivery. There were also disruptions to students' experiences as they navigated a rapid shift to distance learning, often in large Zoom classrooms, alongside the constant worry of exposure to the virus and the health and societal challenges this posed. Findings from this multiple case study found teachers with a clear understanding of learning pedagogy and a willingness to improvise could enhance learning capacity in unpredictable circumstances. In addition, flexible course design resulted in co-creation of knowledge, a marker of productive, hybrid learning environments.

This chapter presents my reflexivity within the thesis, summarises key study findings and presents new knowledge, outlines limitations and future implications for education in health contexts and recommendations for further research.

9.2 Key Findings

This research identifies the characteristics of productive, hybrid learning environments in HE health contexts as seen by students and academic staff across a multi-campus university in Aotearoa New Zealand. The research was guided by asking:

“What are the characteristics of productive, hybrid learning environments in higher education undergraduate health contexts?”

- “How do students and academic staff characterise productive learning activities within hybrid learning environments?”
- “How do learning design elements in hybrid learning environments influence and support student experiences?”

The findings showed productive, hybrid learning environments in higher education undergraduate health contexts provided rich, realistic learning opportunities supporting learner agency as essential preparation for graduate professional practice. The development of an effective teaching team requires attention to onboarding, induction, assessment of teaching skill proficiency and orientation. Staff with a known level of proficiency and expertise in HE learning environments, in combination with ongoing team planning, professional development and debriefing, can establish a teaching dynamic supportive of all staff, despite variation in skills, to create productive, hybrid learning environments.

This research identified the characteristics required for productive hybrid learning environments are predicated on cogent decisions in the design for learning phase prior to course or session delivery. When designing for learning,

priority is commonly placed on securing the resources needed to support the teaching and learning without sufficient consideration given to the pedagogy (the underlying philosophy) of teaching and learning. This consideration is necessary to guide decisions made, the learner, the teachers, and the expected learning outcomes. Key to establishing a productive, hybrid learning environment is the preparation of students, faculty, and resources.

Five key findings of the project are presented below with reference to the relevant taha in Te Whare Tapa Whā.

9.2.1 Stable Modular Course Design Supports Connections with Learners

The study found the purpose of design for learning was to create an environment that supported learning in a planned and structured way, which is consistent with other research (Carvalho & Saunders, 2018; Moore & Campbell, 2021). It became evident that a major benefit of a modular design was the ability to respond flexibly in unexpected circumstances, such as when Covid-19 requirements imposed restrictions on meeting together or travelling. Students were able to adjust the order of their learning content to align with their individual needs and personal circumstances. This finding highlighted the importance of developing new course content or revising existing content into discrete bundles to accommodate student preferences. A highly responsive modular format could respond to unplanned changes and align with heutagogical principles by enhancing student agency.

9.2.2 Curated Content Supports Learner Agency for Knowledge Application.

[Taha Wairua – Beliefs about what students need to learn from a broad view]

Learning content supports students to apply their knowledge in clinical learning experiences and later as registered healthcare professionals. Professional courses must prepare students for healthcare practice settings. The importance of teachers purposefully considering what content to include and how to best present it was evident in each of the cases. At times this occurred during the

course design phase with clinical subject-matter experts collaborating with learning design staff in the development of course resources. However, staff not involved in the development, or who were new to teaching in the course, or who lacked understanding of andragogy and heutagogy, tended to revert to familiar teaching and learning methodologies consistent with the 'Sage on the stage' (King, 1993). In the middle of an emergency Covid-19 pivot, staff may eschew design for learning principles and heutagogical practices to manage pressing challenges. This can compromise learner agency with a consequential loss of co-creative knowledge development and collaborative learning. This finding highlights the imperative for all teaching staff to have a clear understanding of design for learning principles, combined with andragogical and heutagogical practices, that are foundational in a course so they can confidently teach in congruence with these design features.

9.2.3 Build Connections and Community to Sustain Learning.

[Taha Whānau – Relationships to assist teaching and learning]

The importance of building connections and developing a sense of community is a feature common in learning contexts within the extant literature (Doran et al., 2022; Jenssen et al., 2024; Reid-Searl et al., 2019). Teachers made conscious choices about enacting connectivity and community for students in their courses. In CS3 this process exemplified a te ao Māori principle, waiting until most students had completed a module before opening the next so that all could move together as a collective. In CS2, valuing student contributions was evident in the way learner contributions in the observed online workshop were encouraged and built on by teachers. Whereas, in CS1, the teachers were acutely aware of the challenges students had faced during their clinical learning experiences and acknowledged the potential discomfort of performing patient assessments using simulation while observed by peers and teachers. Although a teacher might have a session plan mapped against teaching time, the significance of being flexible in the face of changing circumstances within the session was central to students experiencing productive learning. This finding highlighted the importance of teachers recognising the influence of inter- and

intrapersonal interactions in teaching contexts and adjusting their support to meet individual students' needs.

9.2.4 Synergistic Effect of Effective Teaching Team Collaborations.

[Taha Tinana – The setting has psychosomatic influences on those involved in teaching and learning]

Effective communication within teaching teams can be a challenge when staff are located across campuses and regions. The Covid-19 pandemic with restrictions on travel and the requirement of physical distancing, supported a widespread acceptance of the use of online meeting spaces, such as those supported by Zoom, as teaching and meeting spaces. Teaching teams who were able to identify individual staff expertise and effectively communicate teaching plans, were able to synergistically capitalise on teaching strengths and enjoy their collaboration to create productive learning environments.

A key aspect of this is the shared understanding of underlying pedagogy within a teaching team highlighting the need for teaching staff to recognise and access professional development specific for their identified learning needs. The use of the self-assessment tool developed in this research, 'Readiness for lecturing in hybrid learning environments', enables staff to identify their strengths and areas for development. Professional development targeted at recognised areas for development can enable staff to have a clear idea of what is proposed, what is important, and how they can best contribute to a teaching session. The significance of this finding is first recognising and then addressing professional development needs so staff can work synergistically in teaching sessions to create a productive learning environment.

9.2.5 Supported Challenge Leverages Emotional and Cognitive Processes.

[Taha Hinengaro – Thought processes and cognitive changes occurring through co-creative activities]

This finding indicates the importance of designing incremental and supported challenges similar to those encountered by graduate students in their

professional practice. Prior to exposure to clinical learning experience, these types of unfolding scenarios support collaboration, critical thinking, and can evoke strong emotional responses which, when well-supported, can enhance memory (Carroll & Morse, 2022; Reid-Searl et al., 2019). It is these distinct memories developed in productive, hybrid learning environments as learners created knowledge that supported retention and recall for future practice.

The study findings, collectively, can be framed under overarching principles of design for learning for hybrid productive environments in health care courses:

- Taha Wairua – Beliefs about what students need to learn from a broad view
- Taha Whānau – Relationships to assist teaching and learning
- Taha Tinana – The setting has psychosomatic influences on those involved in teaching and learning.
- Taha Hinengaro – Thought processes and cognitive changes occurring through co-creative activities.

9.3 Significant and Original Contribution to the Field

This is the first systematic literature review and doctoral research project applying the ACAD Framework as part of synthesis analysis to focus on nursing, pharmacology and social work in higher education health contexts. In summary, my original research found conclusively that:

- Productive, hybrid learning environments incorporate rich, realistic learning supporting agency to prepare learners for graduate professional practice.
- An effective teaching team is predicated on recognition and assessment of their teaching proficiency in HE hybrid learning environments.
- The development of a novel Aotearoa Design for Learning framework which included culturally relevant design considerations can supplement design elements not previously evident in the ACAD framework.

There were also three major contributions to new knowledge.

9.3.1 Principles to Guide Future Design

This research has identified 11 principles to guide course design based on heutagogical principles incorporating rich, realistic learning in productive learning environments to prepare students for graduate professional practice. Learning experiences that evoked the realistic challenge of clinical environments in a graduated format supported students' agency to critically consider the patient situation, collaborate with peers and create solutions to address issues and optimise effective patient/client outcomes. Achieving this during the Covid-19 period with the many disruptions to teaching plans was a testament to the design for learning and teaching staff's ability to adapt in response to the changing pandemic mitigation requirements in the cases studied.

Principle 1 Use consistent, stable, predictable formats (kaupapa) in course design.

Principle 2 Curate content to support agency and application of knowledge beyond the initial learning contexts.

Principle 3 Purposeful course design and shared engagement can ameliorate relational connection challenges.

Principle 4 Hybrid, modular formats can provide continuity of learning responsive to societal challenges.

Principle 5 Teachers who communicate effectively and work collaboratively can synergistically capitalise on individual strengths.

Principle 6 Support teaching staff through targeted professional development.

Principle 7 Create a sense of community and safety to support students to navigate unexpected challenges.

Principle 8 Provide intentional support for students by developing rapport, valuing student contributions and providing practical support.

Principle 9 Provide intentional variations in levels of support to build connection and to create a culturally and psychologically safe learning environment.

Principle 10 Mirror aspects of clinical settings with interactive, experiential activities to challenge students and evoke emotions through collaboration and critical thinking.

Principle 11 Develop student knowledge and skills through experiential learning and incremental applications of theory into practice.

9.3.2 A New Self-auditing Tool.

To support effective teaching teams, the novel, self-assessment audit tool can enable staff to identify their personal teaching strengths and highlight areas for targeted professional development. The opportunity for new or existing staff to review their proficiency can enable a teaching team to plan the varying roles and responsibilities of each person and align these with their individual skills. Reviewing how a session is going during and after it is completed, providing opportunities for staff to reflect, critique and strategize teaching sessions and course design, and identify areas for staff professional development. In this way, staff can iteratively review design for learning and maintain or move courses towards becoming productive, hybrid learning environments.

9.3.3 Novel Aotearoa Design for Learning Framework

The Aotearoa Design for Learning Framework used in conjunction with the Activity-Centred Analysis and Design (ACAD) framework (Goodyear & Carvalho, 2014) offered a mātauranga Māori perspective in course design. This novel addition could support design of courses through unique considerations for teaching and learning in Aotearoa New Zealand. The importance of including indigenous knowledge practices and frameworks offered an authentic, contextually relevant and locally situated learning to enhance Western ways of 'knowing' and 'being' dominant in HE settings. In addition, for students in courses leading to professional healthcare roles, contextual relevance was incorporated by use of a framework commonly used by healthcare professionals in this country.

The novel Aotearoa Design for Learning framework can assist teachers and learning designers in the creation and implementation of HE courses that not only consider Set, Social, Epistemic and Emergent / Co-creative design aspects (Goodyear & Carvalho, 2014) but also include culturally relevant design considerations not previously evident in the ACAD framework. This development enables teachers to nudge learners towards hoped-for yet not designable emergent, co-creative elements contributing to productive, hybrid learning environments in HE health contexts.

9.4 Limitations

Qualitative research has the potential to explore the lived experiences of identified phenomena. A potential limitation of this multiple case study was the narrower focus on teaching staff working in higher education learning environments in Aotearoa New Zealand (Stake, 2006). However, the narrow focus allowed me to develop a deeper and richer understanding of the complexities of these learning environments. Moreover, the design for learning strategies identified in this research have contributed to developing knowledge beyond the HE and national contexts to be also used in policy documents. Van der Graaf et al. (2021) in an EU Education Report, acknowledged the concept of designing for transitions during emergencies (Green et al., 2020) providing evidence of the usefulness of this research to international contexts beyond the immediate cases and Aotearoa New Zealand.

Interactions with the participants in qualitative research has the potential to compromise the validity of the data due to the closeness of research relationships and collaborations that ensue in gathering data (Carpenter, 2018). There was a risk of participants consciously or unconsciously wanting to please the researcher by providing what might be perceived to be the 'right' response. These risks in the researcher's role were mitigated through strategies such as providing participants with the proposed interview schedule and encouraging them to select the order and aspects that were covered. In this qualitative, multiple case study, identification of the researcher's insider perspective, biases and values was acknowledged (see Chapter 4.3.5). My reflexivity throughout

this research sought to make transparent the accuracy and trustworthiness of the research findings (Braun & Clarke, 2022; Creswell & Creswell, 2023).

A limitation of this research, referred to throughout, surrounded responding to the Covid-19 pandemic restrictions. Initially, I had planned to interview individual and focus group participants and observe teaching sessions in person. As a result of Covid-19 lockdown requirements, most interviews were conducted using online meeting software. It was not possible to have anticipated the seismic shift that occurred in countries globally necessitating an increased use of technological solutions, including online meeting platforms. However, individual and focus group interviews were recorded and transcribed, and it was possible to identify participants and confirm the accuracy of data with ease. Another limitation could have been my presence observing interactions. However, my image appeared as one of the participant tiles when I was observing the pharmacology tutorial. In this session the spotlight focused on the person speaking rather than the other participants. This allowed my presence to be minimal and less intrusive. There was widespread acceptance of the use of online meeting software as the pandemic period progressed.

9.5 Areas for Further Research

This thesis identifies essential features of productive, hybrid learning environments in undergraduate HE health contexts, building on literature that elicited productive insights, and has taken a postdigital stance where technology and human factors are inextricably enmeshed. In the dissemination of the study findings, I will share design for learning features with HE teachers to create health context courses that are productive and as a catalyst to advance hybrid learning environments.

Further research prioritising design for learning is needed to include ways of incorporating a Māori cultural lens using of the Aotearoa Design for Learning Framework in other HE courses. Western ways of knowing and being have dominated HE contexts yet, globally, students represent diverse cultural heritages and knowledge practices. There is an imperative for international research to co-create design for learning frameworks to incorporate other

cultural lenses to complement the ACAD framework. Understanding the applicability of the Aotearoa Design for Learning Framework in the design of courses might be an area for future studies.

A manageable way to audit existing courses, in relation to the ACAD and Aotearoa Design for Learning frameworks (existing, and new), could be through a phased approach. A review at institutional and overall programme levels is warranted. Future research could focus on the refinements of self-auditing tools to support educators.

And finally, research focusing on assessing the usefulness of the 'Readiness for lecturing in hybrid learning environments' (see Appendix 10) has the potential to be of benefit to improving the effectiveness of teaching teams in HE health contexts.

9.6 Final Thoughts

I set out to discover what characterised productive, hybrid learning environments in HE undergraduate courses health contexts. Along the way I had the privilege to observe various assemblages of task, people and tools, including the influence of a variety of course artefacts. I have listened to the many stories and perspectives of a wide range of people involved in teaching and learning.

I have loved the opportunity to undertake real world research on a topic I am engaged with every day in my academic work. By focusing on undergraduate courses in HE health contexts, my participants, supervisors and I have identified contributors to productive, hybrid learning environments. With an everchanging landscape in HE, there is an imperative for courses to be agile, adaptable, flexible and productive. This study has identified core principles, and practical initiatives to support teachers as they design for learning in courses, enhance learning experiences and outcomes for students, and prepare students for graduate professional practice.

References

- Agostinho, S., Bennett, S., Lockyer, L., Jones, J., & Harper, B. (2020). Learning designs as a stimulus and support for teachers' design practices. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: Principles and practices of design* (3rd ed., pp. 105-119). Routledge.
<https://doi.org/10.4324/9781351252805>
- Allen, T. J. (2021). Infrastructure, literacy and communication: The challenges of emergency remote teaching in a university in Japan. In C. C. Chen (Ed.), *Emergency remote teaching and beyond: Voices from world language teachers and researchers* (pp. 23-42). Springer.
https://doi.org/10.1007/978-3-030-84067-9_2
- Archer-Kuhn, B., Lee, Y., Finnessey, S., & Liu, J. (2020). Inquiry-based learning as a facilitator to student engagement in undergraduate and graduate social work programs. *Teaching & Learning Inquiry*, 8(1), 187-207.
<https://doi.org/10.20343/teachlearningu.8.1.13>
- Aumua, L., & Tominiko, F. (2016). Engaging Pacific in the mainstream. *Journal of Australian and New Zealand Student Services Association*(47), 69-78.
- Baixinho, C. L., Ferreira, Ó. R., Medeiros, M., & de Oliveira, E. S. F. (2022). Participation of nursing students in evidence-based practice projects: Results of two focus groups. *International Journal of Environmental Research and Public Health*, 19(11).
<https://doi.org/10.3390/ijerph19116784>
- Baker, K. J. (2020). Panic-gogy: A conversation with Sean Michael Morris. *National Teaching & Learning Forum*, 29(4), 1-3.
<https://doi.org/10.1002/ntlf.30239>
- Barr, R., & Tagg, J. (1995). From teaching to learning: A new paradigm for undergraduate education. *Change*, 27(6), 12-25.
- Bayne, S. (2015). What's the matter with 'technology-enhanced learning'? *Learning, Media and Technology*, 40(1), 5-20.
<https://doi.org/10.1080/17439884.2014.915851>
- Bayne, S., Evans, P., Ewins, R., Knox, J., Lamb, J., Macleod, H., O'Shea, C., Ross, J., Sheail, P., & Sinclair, C. (2020). *The manifesto for teaching online*. The MIT Press.
- Beaty, L., Hodgson, V., Mann, S., & McConnell, D. (2002, March 26). Towards e-quality in networked e-learning in higher education. *ESRC Research Seminar Series*, Networked Learning Conference, Sheffield.

- Bell, H. S. (2006). *Exiting the matrix: Colonisation, decolonisation and social work in Aotearoa: The voices of Ngāti Raukawa ki te Tonga kaimahi whānau. A thesis submitted in partial fulfilment of the requirements for the degree of Master in Social Work at Massey University, Palmerston North, Aotearoa.*
- Ben-Ari, A., & Enosh, G. (2020). *Dialectics, power, and knowledge construction in qualitative research: Beyond dichotomy*. Routledge.
<https://doi.org/10.4324/9780203506714>
- Bennett, B., Ross, D., & Gates, T. G. (2022). Creating spatial, relational and cultural safety in online social work education during COVID-19. *Social Work Education*, 41(8). <https://doi.org/10.1080/02615479.2021.1924664>
- Biesta, G. (2017). Is there a need for the re(dis)covery of teaching? *New Zealand Journal of Teachers' Work*, 14, 73-79.
<https://doi.org/10.24135/teacherswork.v14i2.231>
- Biesta, G. (2019). Should teaching be re(dis)covered? Introduction to a symposium. *Studies in Philosophy & Education*, 38(5), 549-553.
<https://doi.org/10.1007/s11217-019-09667-y>
- Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *International Review of Research in Open and Distance Learning*, 13(1), 56-71.
- Blaschke, L. M., Bozkurt, A., & Cormier, D. (2021). Learner agency and the learner-centred theories for online networked learning and learning ecologies. In S. Hase & L. M. Blaschke (Eds.), *Unleashing the power of learner agency* (pp. 57-66). EdTech Books.
- Bloomberg, L. D., & Volpe, M. (2019). *Completing your qualitative dissertation: A roadmap from beginning to end* (4th ed.). SAGE.
- Boblin, S. L., Ireland, S., Kirkpatrick, H., & Robertson, K. (2013). Using stake's qualitative case study approach to explore implementation of evidence-based practice. *Qualitative Health Research*, 23(9), 1267-1275.
<https://doi.org/10.1177/1049732313502128>
- Bower, M., & Vlachopoulos, P. (2018). A critical analysis of technology-enhanced learning design frameworks. *British Journal of Educational Technology*, 49(6), 981-997. <https://doi.org/10.1111/bjet.12668>
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.
<https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2021). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328-352. <https://doi.org/10.1080/14780887.2020.1769238>
- Braun, V., & Clarke, V. (2022). *Thematic analysis: A practical guide*. SAGE.

- Braun, V., & Clarke, V. (2024). Supporting best practice in reflexive thematic analysis reporting in Palliative Medicine: A review of published research and introduction to the Reflexive Thematic Analysis Reporting Guidelines (RTARG). *Palliative Medicine*, 38(6), 608-616. <https://doi.org/10.1177/02692163241234800>
- Braun, V., Clarke, V., Hayfield, N., & Terry, G. (2019). Thematic analysis. In P. Liamputtong (Ed.), *Handbook of research methods in health social sciences* (pp. 843-860). Springer. https://doi.org/10.1007/978-981-10-5251-4_103
- Bridges, S. M., Chan, L. K., Chen, J. Y., Tsang, J. P. Y., & Ganotice, F. A. (2020). Learning environments for interprofessional education: A micro-ethnography of sociomaterial assemblages in team-based learning. *Nurse Education Today*, 94. <https://doi.org/10.1016/j.nedt.2020.104569>
- Brinkmann, S., & Kvale, S. (2015). *InterViews: Learning the craft of qualitative research interviewing* (3rd ed.). SAGE.
- Bronfenbrenner, U. (1997). Ecological models of human development. In M. Cole & M. Gauvain (Eds.), *Readings on the development of children* (2nd ed., pp. 37-43). W.H. Freeman.
- Brown, M., Conole, G., & Beblavý, M. (2019). *Education outcomes enhanced by the use of digital technology: Reimagining the school learning ecology* (38). European Commission.
- Browne, L., & Foss, L. (2023). How does the discourse of published research record the experience of Generation Z as students in the Higher Education sector? *Journal of Further & Higher Education*, 47(4), 513-527. <https://doi.org/10.1080/0309877X.2022.2143257>
- Brunton, G., Oliver, S., & Thomas, J. (2020). Innovations in framework synthesis as a systematic review method. *Research Synthesis Methods*, 11(3), 316-330. <https://doi.org/10.1002/jrsm.1399>
- Bülow, M. W. (2022). Designing synchronous hybrid learning spaces: Challenges and opportunities. In E. Gil, Y. Mor, Y. Dimitriadis, & C. Köppe (Eds.), *Hybrid learning spaces* (1 ed., pp. x, 333). Springer.
- Came, H., O'Sullivan, D., Kidd, J., & McCreanor, T. (2020). The Waitangi Tribunal's WAI 2575 Report: Implications for decolonizing health systems. *Health & Human Rights: An International Journal*, 22(1), 209-220.
- Carpenter, D. (2018). Ethics, reflexivity and virtue. In R. Iphofen & M. Tolich (Eds.), *The SAGE handbook of qualitative research ethics* (1st ed., pp. 35-50). SAGE. <https://doi.org/10.4135/9781526435446.n3>

- Carroll, C., Booth, A., & Cooper, K. (2011). A worked example of "best fit" framework synthesis: A systematic review of views concerning the taking of some potential chemopreventive agents. *BMC Medical Research Methodology*, 11(1), 29-37. <https://doi.org/10.1186/1471-2288-11-29>
- Carroll, C., Booth, A., Leaviss, J., & Rick, J. (2013). "Best fit" framework synthesis: Refining the method. *BMC Medical Research Methodology*, 13(1), 1-16. <https://doi.org/10.1186/1471-2288-13-37>
- Carroll, J. A., & Morse, K. J. (2022). Engaging learners in productive struggle: Escape rooms as a teaching tool. *Journal of Nursing Education*, 61(9). <https://doi.org/10.3928/01484834-20220413-01>
- Carvalho, L., Czerniewicz, L., & Lamb, J. (2024). Positive, postdigital spaces for learning. *Postdigital Science and Education*, 1-16. <https://doi.org/10.1007/s42438-024-00523-y>
- Carvalho, L., & Goodyear, P. (2014). *The architecture of productive learning networks*. Routledge. <https://doi.org/10.4324/9780203591093>
- Carvalho, L., & Goodyear, P. (2020). Productive learning networks. In M. A. Peters (Ed.), *Encyclopedia of Teacher Education*. Springer Nature. https://doi.org/10.1007/978-981-13-1179-6_106-1
- Carvalho, L., Goodyear, P., & de Laat, M. (2017). *Place-based spaces for networked learning*. Routledge.
- Carvalho, L., & Saunders, R. (2018). Coding, designing and networking: fostering learning through social connections. *Research in Learning Technology*, 26, 1-18. <https://doi.org/10.25304/rlt.v26.2006>
- Castañeda, L., Villar-Onrubia, D., Haba-Ortuno, I., Postigo-Fuentes, A., & Amab, S. (2022). Game-based networked learning. *Proceedings for the Thirteenth International Conference on Networked Learning*, 273-277. <https://dalicitizens.eu/wp-content/uploads/2023/12/Game-based-Networked-Learning.pdf>
- Chua, K. H., & Bong, W. K. (2022). Providing inclusive education through virtual classrooms: A study of the experiences of secondary science teachers in Malaysia during the pandemic. *International Journal of Inclusive Education*, 1-18. <https://doi.org/10.1080/13603116.2022.2042403>
- Conole, G. (2020). Frameworks to guide practice. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: Principles and practices of design* (3rd ed., pp. 164-178). Routledge.
- Creswell, J. W., & Creswell, J. D. (2023). *Research design: Qualitative, quantitative and mixed methods approaches* (6th ed.). SAGE.
- Creswell, J. W., & Guetterman, T. C. (2019). *Educational research: Planning, conducting, and evaluating quantitative and qualitative research* (6th ed.). Pearson.

- Creswell, J. W., & Poth, C. N. (2018). *Qualitative inquiry & research design: Choosing among five approaches* (4th ed.). SAGE.
- Cummings, C., Dunkle, J., Koller, J., Lewis, J. B., & Mooney, L. (2023). Social work students and COVID-19: Impact across life domains. *Journal of Social Work Education, 59*(1), 91-103.
<https://doi.org/10.1080/10437797.2021.1974992>
- Curtis, E., Jones, R., Tipene-Leach, D., Walker, C., Loring, B., Paine, S.-J., & Reid, P. (2019). Why cultural safety rather than cultural competency is required to achieve health equity: A literature review and recommended definition. *International Journal for Equity in Health, 18*, 1-17.
<https://doi.org/10.1186/s12939-019-1082-3>
- Czerniewicz, L. (2018). Inequality as higher education goes online. In N. B. Dohn, S. Cranmer, J.-A. Sime, M. de Laat, & T. Ryberg (Eds.), *Networked learning: Research in networked learning* (pp. 95-106). Springer. https://doi.org/10.1007/978-3-319-74857-3_6
- Czerniewicz, L., & Carvalho, L. (2023). Open, distance, and digital education (ODDE): An equity view. In O. Zawacki-Richter & I. Jung (Eds.), *Handbook of open, distance and digital education* (pp. 441-459). Springer Nature Reference.
- Damşa, C., & Jornet, A. (2016). Revisiting learning in higher education: Framing notions redefined through an ecological perspective. *Frontline Learning Research, 4*(4), 39-47. <https://doi.org/10.14786/flr.v4i4.208>
- Damşa, C., Nerland, M., & Andreadakis, Z. E. (2019). An ecological perspective on learner-constructed learning spaces. *British Journal of Educational Technology, 50*(5), 2075-2089. <https://doi.org/10.1111/bjet.12855>
- Dekkers, R., Drylie Carey, L., & Langhorne, P. (2022). *Making literature reviews work: A multidisciplinary guide to systematic approaches*. Springer.
- Denzin, N. K., & Lincoln, Y. S. (2018). *The Sage handbook of qualitative research* (5th ed.). SAGE.
- Domyancich-Lee, S. C., Cleeland, L. R., & McCleary, J. S. (2022). Comics in the classroom: Teaching with graphic novels. *Journal of Social Work Education, 58*(3). <https://doi.org/10.1080/10437797.2021.1942353>
- Doran, F., Wrigley, B., & Rix, E. (2022). "Teaching in Circle" with student nurses contributes to experiential understanding of cultural safety. *Contemporary Nurse, 58*(1).
<https://doi.org/10.1080/10376178.2022.2054840>
- Douglas, K. A., Johnston, A. C., Martin, J. P., Short, T., & Soto-Pérez, R. A. (2022). How engineering instructors supported students during emergency remote instruction: A case comparison. *Computer Applications in Engineering Education, 30*(3), 934-955.
<https://doi.org/10.1002/cae.22495>

- Dreifuerst, K. T. (2015). Getting started with debriefing for meaningful learning. *Clinical Simulation in Nursing*, 11(5), 268-275. <https://doi.org/http://dx.doi.org/10.1016/j.ecns.2015.01.005>
- Durie, M. (1994). *Whaiora: Māori health development*. Oxford University Press.
- Durie, M. H. (1985). A Maori perspective of health. *Social Science & Medicine*, 20(5), 483-486. [https://doi.org/10.1016/0277-9536\(85\)90363-6](https://doi.org/10.1016/0277-9536(85)90363-6)
- Durie, M. K. (2021). Mātauranga at the interface: An interdisciplinary starter. In J. Ruru & L. W. Nikora (Eds.), *Ngā kete mātauranga: Māori scholars at the research interface* (pp. 22-35). Otago University Press.
- Dwyer, S. C., & Buckle, J. L. (2009). The space between: On being an insider-outsider in qualitative research. *International Journal of Qualitative Methods*, 8. <https://doi.org/10.1177/160940690900800105>
- Dwyer, S. C., & Buckle, J. L. (2018). Reflection/commentary on a past article: "The space between: On being an insider-outsider in qualitative research". *International Journal of Qualitative Methods*, 17. <https://doi.org/10.1177/1609406918788176>
- Egonsdotter, G., Bengtsson, S., Israelsson, M., & Borell, K. (2020). Child protection and cultural awareness: Simulation-based learning. *Journal of Ethnic and Cultural Diversity in Social Work*, 29(5). <https://doi.org/10.1080/15313204.2018.1493013>
- Ellis, R. A., & Goodyear, P. (2019). *The education ecology of universities: Integrating learning, strategy and the academy*. Routledge.
- Esposito, C. P., & Sullivan, K. (2020). Maintaining clinical continuity through virtual simulation during the COVID-19 pandemic. *Journal of Nursing Education*, 59(9). <https://doi.org/10.3928/01484834-20200817-09>
- Fawns, T. (2019). Postdigital education in design and practice. *Postdigital Science and Education*, 1(1), 132-145. <https://doi.org/10.1007/s42438-018-0021-8>
- Fawns, T., Aitken, G., & Jones, D. (2019). Online learning as embodied, socially meaningful experience. *Postdigital Science and Education*, 1(2), 293. <https://doi.org/10.1007/s42438-019-00048-9>
- Fawns, T., Jones, D., & Aitken, G. (2021, 12 July). Agile course design for professional education. <https://blogs.ed.ac.uk/learningexchange/2021/01/20/agile-course-design-for-professional-education/>
- Fawns, T., Mulherin, T., Hounsell, D., & Aitken, G. (2021). Seamless learning and professional education. *Studies in Continuing Education*, 43(3), 360-376. <https://doi.org/10.1080/0158037X.2021.1920383>

- Fawns, T., & O'Shea, C. (2019). Evaluative judgement of working practices. *Italian Journal of Educational Technology*, 27(1), 5-18.
<https://doi.org/10.17471/2499-4324/1027>
- Fawns, T., & Ross, J. (2021). Exploring the metaphore of the network. *Postdigital Science and Education*, 3(2), 351-352.
<https://doi.org/10.1007/s42438-021-00222-y>
- Flyvbjerg, B. (2011). Case study. In N. K. Denzin & Y. S. Lincoln (Eds.), *The SAGE handbook of qualitative research* (4 ed., pp. 301-316). SAGE.
- Fox, J. G., & O'Maley, P. (2023). 'If you don't have a relationship with your tutor...you don't care about the subject': Revisiting the role of the teacher - getting off the 'sideline' and 'meddling in the middle'. *Social Work Education*, 42(6), 809-830.
<https://doi.org/10.1080/02615479.2021.1988918>
- Freire, P. (1972). *Pedagogy of the oppressed*. Penguin.
- García-Fernández, B., González-Sanz, P., Saiz-Navarro, E. M., Belinchón-deMiguel, P., & Clemente-Suárez, V. J. (2025). Impact of high-fidelity simulation and OSCE on stress, academic performance, and well-being in nursing students. *SAGE Open Nursing*, 11, 1-11.
<https://doi.org/10.1177/23779608251365805>
- Gil, E., Mor, Y., Dimitriadis, Y., & Köppe, C. (Eds.). (2022). *Hybrid learning spaces*. Springer.
- Goodyear, P. (2020). Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *British Journal of Educational Technology*, 51(4), 1045-1060.
<https://doi.org/10.1111/bjet.12925>
- Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (pp. 48-70). Routledge.
<https://doi.org/10.4324/9780203591093>
- Goodyear, P., & Carvalho, L. (2020). The analysis of complex learning environments. In H. Beetham & R. Sharpe (Eds.), *Rethinking pedagogy for a digital age: Principles and practices of design* (3rd ed., pp. 49-65). Routledge.
- Goodyear, P., Carvalho, L., & Yeoman, P. (2021). Activity-Centred Analysis and Design (ACAD): Core purposes, distinctive qualities and current developments. *Educational Technology Research and Development: A bi-monthly publication of the Association for Educational Communications & Technology*, 69(2), 445-464.
<https://doi.org/10.1007/s11423-020-09926-7>

- Goodyear, P., & Dimitriadis, Y. (2013). In medias res: Reframing design for learning. *Research in Learning Technology*, 21(0), 1-13.
<https://doi.org/10.3402/rlt.v21i0.19909>
- Gourlay, L. (2021). There Is no 'Virtual Learning': The materiality of digital education. *Journal of New Approaches in Educational Research*, 10(1), 57-66. <https://doi.org/10.7821/naer.2021.1.649>
- Gourlay, L., Rodríguez-Illera, J. L., Barberà, E., Bali, M., Gachago, D., Pallitt, N., Jones, C., Bayne, S., Hansen, S. B., Hrastinski, S., Jaldemark, J., Themelis, C., Pischetola, M., Dirckinck-Holmfeld, L., Matthews, A., Gulson, K. N., Lee, K., Bligh, B., Thibaut, P., . . . Knox, J. (2021). Networked learning in 2021: A community definition. *Postdigital Science and Education*, 3(2), 326-369. <https://doi.org/10.1007/s42438-021-00222-y>
- Grech, A., & Cassar, M. (2018). Can virtual learning environments be used as research platforms? *Nurse Researcher*, 26(3), 31-34.
<https://doi.org/10.7748/nr.2018.e1568>
- Green, J. K. (2022). Designing hybrid spaces for learning in higher education health contexts. *Postdigital Science and Education*, 4(1), 93-115.
<https://doi.org/10.1007/s42438-021-00268-y>
- Green, J. K., Burrow, M. S., & Carvalho, L. (2020). Designing for transition: Supporting teachers and students cope with emergency remote education. *Postdigital Science and Education*, 2(3), 906-922.
<https://doi.org/10.1007/s42438-020-00185-6>
- Green, J. K., & Huntington, A. D. (2017). Online professional development for digitally differentiated nurses: An action research perspective. *Nurse Education in Practice*, 22, 55-62.
<https://doi.org/10.1016/j.nepr.2016.11.009>
- Green, J. K., Ruwhiu, P. A., Carvalho, L. F., & Sheridan, N. (2023). Indigenous learning practices: Creating reflective spaces for growth and transformation. In T. Jaffer, S. Govender, & L. Czerniewicz (Eds.), *Learning design voices*. Ed Tech Books.
- Gutman, L. M., Perowne, R., Younas, F., & O'Hanrachaigh, E. (2024). Making hybrid work for diverse staff in higher education: A behaviour change approach. *Higher Education Quarterly*, 78(3), 784-806.
<https://doi.org/10.1111/hequ.12487>
- Hase, S., & Blaschke, L. M. (2021a). The pedagogy of learner agency. In S. Hase & L. M. Blaschke (Eds.), *Unleashing the power of learner agency* (pp. 25-29). EdTech Books.
- Hase, S., & Blaschke, L. M. (Eds.). (2021b). *Unleashing the power of learner agency*. EdTech Books.

- Hase, S., & Kenyon, C. (2001). Moving from andragogy to heutagogy in vocational education. Retrieved 15 April 2012, from <https://files.eric.ed.gov/fulltext/ED456279.pdf>
- Hayes, C., & Graham, Y. (2019). Social interactivity as driver and digital technology as vehicle: Facilitating affective domain learning for undergraduates. *Higher Education, Skills and Work-based Learning*, 10(2), 313-324. <https://doi.org/10.1108/HESWBL-05-2019-0068>
- Hinton, T., Yeoman, P., Ashor, L., & Poronnik, P. (2017). Spaces enabling change: X-Lab and science education 2020. In L. Carvalho, P. Goodyear, & M. de Laat (Eds.), *Place-based spaces for networked learning* (pp. 207-224). Routledge.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning. *Educause Review*, 1-6. Retrieved 13 September 2020, from <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>
- Hodgson, V., & McConnell, D. (2019). Networked learning and postdigital education. *Postdigital Science and Education*, 1(1), 43-64. <https://doi.org/10.1007/s42438-018-0029-0>
- Huberman, A. M., & Miles, M. B. (2002). *The qualitative researcher's companion*. SAGE.
- Illich, I. (1973). *Tools for conviviality*. Calder and Boyars.
- INACSL Standards Committee. (2021). Onward and upward: Introducing the healthcare simulation standards of best practice. *Clinical Simulation in Nursing*, 58, 1-4. <https://doi.org/10.1016/j.ecns.2021.08.006>
- INACSL Standards Committee, Persico, L., Belle, A., DiGregorio, H., Wilson-Keated, B., & Shelton, C. (2021). Healthcare Simulation Standards of Best Practice Facilitation. *Clinical Simulation in Nursing*, 58, 22-26. <https://doi.org/10.1016/j.ecns.2021.08.010>
- Jackson, N. J. (2019). Ecologies for learning and practice in higher education ecosystems. In R. Barnett & N. J. Jackson (Eds.), *Ecologies for learning and practice: Emerging ideas, sightings and possibilities* (pp. 81-96). Routledge. <https://doi.org/10.4324/9781351020268>
- Jackson, N. J. (n.d). *Exploring the idea of learning ecologies, it's value and use in understanding students' lifewide learning, development and achievement*. Lifewide Education. Retrieved 30 October 2022 from http://www.normanjackson.co.uk/uploads/1/0/8/4/10842717/exploring_learning_ecologies.pdf
- Jaffer, T., Govender, S., & Czerniewicz, L. (Eds.). (2023). *Learning design voices*. EdTech Books. <https://doi.org/10.59668/279>.

- Jandrić, P., & Ford, D. (2022). Postdigital ecopedagogies: Genealogies, contradictions, and possible futures. In P. Jandrić & D. Ford (Eds.), *Postdigital ecopedagogies: Genealogies, contradictions, and possible futures* (pp. 3-24). Springer.
- Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, 50(10), 893-899. <https://doi.org/10.1080/00131857.2018.1454000>
- Jenssen, U., Bochenek, J. M., King, T. S., Steindal, S. A., Hestvold, I. V., & Morrison-Beedy, D. (2024). Impact of COIL: Learning from student nurses in Norway who collaborated with U.S. students. *Journal of Transcultural Nursing*, 35(1). <https://doi.org/10.1177/10436596231209043>
- Kable, A. K., Pich, J., & Maslin-Prothero, S. E. (2012). A structured approach to documenting a search strategy for publication: A 12 step guideline for authors. *Nurse Education Today*, 32, 878-886. <https://doi.org/10.1016/j.nedt.2012.02.022>
- Kahu, E. R. (2021). *The importance of building whanaungatanga: Building relationships with first-year online students*. Online: TEC Retrieved from <https://unistars.org/papers/STARS2021/02C.pdf>
- Kamenetz, A. (2020). 'Panic-gogy': Teaching online classes during the Coronavirus pandemic. National Public Radio - KQED. Retrieved 07 September 2025 from <https://www.kqed.org/mindshift/55554/panic-gogy-teaching-online-classes-during-the-coronavirus-pandemic>
- Kawasaki, H., Yamasaki, S., & Rahman, M. M. (2021). Developing a hybrid platform for emergency remote education of nursing students in the context of covid-19. *International Journal of Environmental Research and Public Health*, 18(24). <https://doi.org/10.3390/ijerph182412908>
- King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30-35.
- Kitson, A. L. (2018). The Fundamentals of Care Framework as a Point-of-Care Nursing Theory. *Nursing Research*, 67(2), 99-107. <https://doi.org/10.1097/NNR.0000000000000271>
- Knowles, M. S., Holton III, E. F., & Swanson, R. A. (2011). *The adult learner: The definitive classic in adult education and human resource development* (7th ed.). Elsevier.
- Knowles, M. S., Holton III, E. F., Swanson, R. A., & Robinson, P. A. (2020). *The adult learner: The definitive classic in adult education and human resource development* (9th ed.). Routledge.

- Knox, J. (2019). What does the 'Postdigital' mean for education? Three critical perspectives on the digital, with implications for educational research and practice. *Postdigital Science and Education*, 1(2), 357-370. <https://doi.org/10.1007/s42438-019-00045-y>
- Knox, J., Williamson, B., & Bayne, S. (2020). Machine behaviourism: Future visions of 'learnification' and 'datafication' across humans and digital technologies. *Learning, Media and Technology*, 45(1), 31-45. <https://doi.org/10.1080/17439884.2019.1623251>
- Kumpula, R. S., & Krumwiede, K. A. (2023). Facilitating a virtual international experience for undergraduate students: Creating global awareness and connection. *Journal of Nursing Education*, 62(10). <https://doi.org/10.3928/01484834-20230404-08>
- Lacey, C., Huria, T., Beckert, L., Gilles, M., & Pitama, S. (2011). The Hui Process: A framework to enhance the doctor-patient relationship with Māori. *The New Zealand Medical Journal*, 124(1347), 72-78.
- Lamb, J., Carvalho, L., Gallagher, M., & Knox, J. (2022). The postdigital learning spaces of higher education. *Postdigital Science and Education*. <https://doi.org/10.1007/s42438-021-00279-9>
- Laurillard, D. (2013). *Rethinking university teaching: A conversational framework for the effective use of learning technologies* (2nd ed.). Taylor and Francis.
- Lewin, S., Booth, A., Glenton, C., Munthe-Kaas, H., Rashidian, A., Wainwright, M., Bohren, M., A., Tunçalp, Ö., Colvin, C., J., Garside, R., Carlsen, B., Langlois, E., V., & Noyes, J. (2018). Applying GRADE-CERQual to qualitative evidence synthesis findings: Introduction to the series. In *Implementation Science* (Vol. 13, pp. 1-10): BMC.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. SAGE.
- Männistö, M., Mikkonen, K., Kuivila, H. M., Virtanen, M., Kyngäs, H., & Kääriäinen, M. (2019). Digital collaborative learning in nursing education: A systematic review. *Scandinavian Journal of Caring Sciences*, 1-13. <https://doi.org/10.1111/scs.12743>
- Markauskaite, L., Carvalho, L., & Fawns, T. (2023). The role of teachers in a sustainable university: From digital competencies to postdigital capabilities. *Educational Technology Research and Development*, 71(1), 181-198. <https://doi.org/10.1007/s11423-023-10199-z>
- Mars, M. M., Bronstein, J. L., & Lusch, R. F. (2012). The value of a metaphor: Organizations and ecosystems. *Organizational Dynamics*, 41(4), 271-280. <https://doi.org/10.1016/j.orgdyn.2012.08.002>
- Mattingly, J. A. (2021). Fostering cultural safety in nursing education: Experiential learning on an American Indian reservation. *Contemporary Nurse*, 57(5). <https://doi.org/10.1080/10376178.2021.2013124>

- Maxwell, J. (2002). Understanding and validity in qualitative research. In A. M. Huberman & M. B. Miles (Eds.), *The qualitative researcher's companion* (pp. 37-64). SAGE.
- Mayer, R. E. (2014). Multimedia instruction. In J. M. Spector, M. D. Merrill, J. Elen, & M. J. Bishop (Eds.), *Handbook of research on educational communications and technology* (4th ed., pp. 385-399). Springer.
https://doi.org/10.1007/978-1-4614-3185-5_31
- McGovern, J. (2019). Improving undergraduate competence in multicultural gerontology practice with fresh pedagogies: A digital storytelling case example. *Gerontology and Geriatrics Education*, 40(4).
<https://doi.org/10.1080/02701960.2018.1489249>
- Merriam, S. B. (1998). *Qualitative research and case study applications in education*. Jossey-Bass.
- Mezirow, J. (Ed.). (2000). *Learning as transformation: Critical perspectives on a theory in progress* (1st ed.). Jossey-Bass.
- Mills, K., Creedy, D. K., Sunderland, N., Allen, J., Carter, A., & Corporal, S. (2022). Evaluation of a First Peoples-led, emotion-based pedagogical intervention to promote cultural safety in undergraduate non-Indigenous health professional students. *Nurse Education Today*, 109.
<https://doi.org/10.1016/j.nedt.2021.105219>
- Moore, L., & Campbell, N. (2021). Effectiveness of an escape room for undergraduate interprofessional learning: A mixed methods single group pre-post evaluation. *BMC Medical Education*, 21(1).
<https://doi.org/10.1186/s12909-021-02666-z>
- Mor, Y., Craft, B., & Maina, M. (2015). Introduction: Learning design: Definitions, current issues, and grand challenges. In M. Maina, B. Craft, & Y. Mor (Eds.), *The art & science of learning design*. Sense Publishers.
- Munthe-Kaas, H. M., Booth, A., Sommer, I., Cooper, S., Garside, R., Hannes, K., Noyes, J., & The CAMELOT Development Group. (2024). Developing CAMELOT for assessing methodological limitations of qualitative research for inclusion in qualitative evidence synthesis. *Cochrane Evidence Synthesis and Methods*, 2, 16.
<https://doi.org/10.1002/cesm.12058>
- Nadaf, C., Bench, S., Halpin, Y., & Terry, L. (2025). Critical points of risk in Registered Nurses' use of a national Early Warning Score—Perceptions and challenges. *Journal of Advanced Nursing*, 81(8), 4871-4882.
<https://doi.org/10.1111/jan.16656>
- Networked Learning Editorial Collective (NLEC). (2020). Networked learning: Inviting redefinition. *Postdigital Science and Education*, 1-14.
<https://doi.org/10.1007/s42438-020-00167-8>

- Nicolini, D. (2012). *Practice theory, work, and organization: An introduction*. OUP Oxford.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1-13.
<https://doi.org/10.1177/1609406917733847>
- Nunev, S. T. (2020). Club forms of activities and creation of educational environment promoting the development of social work students. *Social Work Education*, 39(3). <https://doi.org/10.1080/02615479.2019.1627309>
- O'Toole, L., Hayes, N., & Halpenny, A. M. (2019). Animating systems: The ecological value of Bronfenbrenner's bioecological model of development. In R. Barnett & N. Jackson (Eds.), *Ecologies for learning and practice: Emerging ideas, sightings and possibilities* (1st ed., pp. 19-31). Routledge.
- Otto, S., Bertel, L. B., Lyngdorf, N. E. R., Markman, A. O., Andersen, T., & Ryberg, T. (2024). Emerging digital practices supporting student-centered learning environments in higher education: A review of literature and lessons learned from the COVID-19 pandemic. *Education and Information Technologies*, 29(2), 1673-1696.
<https://doi.org/10.1007/s10639-023-11789-3>
- Owen, W. F. (1984). Interpretive themes in relational communication. *Quarterly Journal of Speech*, 70(3), 274-287.
<https://doi.org/10.1080/00335638409383697>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ (British Medical Journal)*, 372(3), n71-n71.
<https://doi.org/10.1136/bmj.n71>
- Plaza del Pino, F. J., Arrogante, O., Simonelli-Muñoz, A. J., Gallego-Gómez, J. I., & Jiménez-Rodríguez, D. (2022). Use of high-fidelity clinical simulation for the development of cultural competence of nursing students. *Nurse Education Today*, 116. <https://doi.org/10.1016/j.nedt.2022.105465>
- Polit, D. F., & Beck, C. T. (2022). *Essentials of nursing research: Appraising evidence for nursing practice* (10th ed.). Wolters Kluwer.
- Rambaree, K., Nässén, N., Holmberg, J., & Fransson, G. (2023). Enhancing cultural empathy in international social work education through virtual reality. *Education Sciences*, 13(5).
<https://doi.org/10.3390/educsci13050507>
- Ramsden, I. (1993). Kawa Whakaruruhau: Cultural safety in nursing education in Aotearoa (New Zealand). *Nursing praxis in New Zealand*, 8(3), 4-10.

- Reid-Searl, K., Mainey, L., Bassett, J., & Dwyer, T. (2019). Using simulation to prepare neophyte nursing students to deliver intimate patient care. *Collegian*, 26(2). <https://doi.org/10.1016/j.colegn.2018.08.001>
- Reiser, R. A. (2001). A history of instructional design and technology: Part II: A history of instructional design. *Educational Technology Research and Development*, 49(2), 57. <https://doi.org/10.1007/BF02504928>
- Ribeiro, C. G., Ramos, P. d. S., Bechara, R. N., de Oliveira, J. M., de Almeida, E. B., Miguel, S. S., Ricardo, D. R., & de Oliveira, R. G. (2024). Health professions' perspective on emergency remote education. *Higher Education, Skills and Work-based Learning*, 14(2), 255-270. <https://doi.org/10.1108/HESWBL-01-2023-0019>
- Richardson, L., & St. Pierre, E. A. (2005). Writing: A method of inquiry. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (3rd ed., pp. 959-978). SAGE.
- Robinson, R. S. (2014). Purposive sampling. In A. C. Michalos (Ed.), *Encyclopedia of quality of life and well-being research* (pp. 5243-5245). Springer Netherlands. https://doi.org/10.1007/978-94-007-0753-5_2337
- Ruwhiu, L. A. (2001). Bicultural issues in Aotearoa New Zealand social work. In M. Connolly (Ed.), *New Zealand Social Work: Contexts and practice* (pp. 54-71). Oxford University Press.
- Ruwhiu, P. A. (2019). Te whakapakari ake i te mahi: Mana-enhancing practice: Engagement with social work students and practitioners. In R. Munford, K. O'Donoghue, & J. Ife (Eds.), *New theories for social work practice : ethical practice for working with individuals, families and communities* (pp. 195-211). Jessica Kingsley Publishers.
- Ryberg, T., & Sinclair, C. (2016). The relationships between policy, boundaries and research in networked learning. In T. Ryberg, C. Sinclair, S. Bayne, & M. de Laat (Eds.), *Research, boundaries, and policy in Networked Learning* (pp. 1-22). Springer. https://doi.org/10.1007/978-3-319-31130-2_1
- Sangrà, A., Raffaghelli, J. E., & Veletsianos, G. (2019). "Lifelong learning ecologies: Linking formal and informal contexts of learning in the digital era". *British Journal of Educational Technology*, 50(4), 1615-1618. <https://doi.org/10.1111/bjet.12828>
- Shorey, S., Kowitlawakul, Y., Devi, M. K., Chen, H. C., Soong, S. K. A., & Ang, E. (2018). Blended learning pedagogy designed for communication module among undergraduate nursing students: A quasi-experimental study. *Nurse Education Today*, 61, 120-126. <https://doi.org/10.1016/j.nedt.2017.11.011>
- Stake, R. E. (2006). *Multiple case study analysis*. The Guilford Press.

- Stec, M., Smith, C., & Jacox, E. (2019). Technology enhanced teaching and learning: Exploration of faculty adaptation to ipad delivered curriculum. *Technology, Knowledge and Learning*. <https://doi.org/10.1007/s10758-019-09401-0>
- Sun, S., Y. H. , & Goodyear, P. (2020). Social co-configuration in online language learning. *Australasian Journal of Educational Technology*, 36(2), 13-26. <https://doi.org/10.14742/ajet.5102>
- Tabatabaee, S. S., Jambarsang, S., & Keshmiri, F. (2024). Cognitive load theory in workplace-based learning from the viewpoint of nursing students: Application of a path analysis. *BMC Medical Education*, 24(1). <https://doi.org/10.1186/s12909-024-05664-z>
- Terry, G., & Hayfield, N. (2025). Reflexive thematic analysis and men's embodiment following injury or illness: A worked example. *Anatomical Sciences Education*, 1-9. <https://doi.org/10.1002/ase.70058>
- The GRADE-CERQual Project Group. (2018). A practical guide for decision makers in health and social care and other users: How to use and interpret findings from qualitative evidence syntheses assessed using the CERQual approach. Retrieved 20250319, from <https://drive.google.com/open?id=1tF0rhDmihpzd3B6BDFHcD8msDu1rqYjR>
- Thomas, G. (2016). *How to do your case study* (2nd ed.). SAGE.
- Trede, F., Macfarlane, S., Markauskaite, L., & McEwen, C. (2019). *Education for practice in a hybrid space: Enhancing professional learning with mobile technology*. Springer.
- United Nations. (n.d.). *Transforming our world: The 2030 agenda for sustainable development*. Retrieved 12 July from <https://sdgs.un.org/2030agenda>
- United Nations DESA. (2021). *SDGs Learning: Filling the gaps in HE*. <https://sdgs.un.org/events/filling-gaps-further-education-2030-agenda-and-inspiring-action-towards-sdgs-33319>
- Van der Graaf, L., Dunajeva, J., Siarova, H., & Bankauskaite, R. (2021). *Research for CULT Committee – Education and Youth in Post-COVID-19 Europe – Crisis Effects and Policy Recommendations*. Brussels: European Parliament Retrieved from [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690872/IPOL_STU\(2021\)690872_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/690872/IPOL_STU(2021)690872_EN.pdf)
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. Jolm-Steiner, S. Scribner, & E. Souberman, Eds.). Harvard University Press. <https://doi.org/10.2307/j.ctvjf9vz4>

- Waitangi Tribunal. (2019). *Hauora: Report on stage one of the health services and outcomes kaupapa inquiry (WAI 2572)*.
https://forms.justice.govt.nz/search/Documents/WT/wt_DOC_152801817/Hauora%20W.pdf
- Walker, R. (1986). *The meaning of biculturalism*. R.J. Walker.
- Walker, S. (2012). The teaching of Māori social work practice and theory to a predominantly Pākehā audience. *Aotearoa New Zealand Social Work Review*, 24, 65-74.
- Watson, A. (2020). Pā Harakeke as a research model of practice. *Aotearoa New Zealand Social Work Review*, 32(3), 30-42.
<https://doi.org/10.11157/anzswj-vol32iss3id767>
- Whittemore, R., Chao, A., Jang, M., Mingos, K. E., & Park, C. (2014). Methods for knowledge synthesis: An overview. *Heart & Lung*, 43(5), 453-461.
<https://doi.org/10.1016/j.hrtlng.2014.05.014>
- Wilson, D., Moloney, E., Parr, J. M., Aspinall, C., & Slark, J. (2021). Creating an indigenous Māori-centred model of relational health: A literature review of Māori models of health. *Journal of Clinical Nursing*, 00, 1-7.
<https://doi.org/10.1111/jocn.15859>
- Woodley, L. (2020). Stone Soup: A metaphor to create an inclusive learning environment within nursing education. *Journal of Nursing Education*, 59(11). <https://doi.org/10.3928/01484834-20201020-10>
- Woolley, K., & Fishbach, A. (2022). Motivating personal growth by seeking discomfort. *Psychological Science*, 33(4), 510-523.
<https://doi.org/10.1177/09567976211044685>
- Yeoman, P., & Wilson, S. (2019). Designing for situated learning: Understanding the relations between material properties, designed form and emergent learning activity. *British Journal of Educational Technology*, 50(5), 2090-2108. <https://doi.org/10.1111/bjet.12856>
- Yin, R. K., & Campbell, D. T. (2018). *Case study research and applications: Design and methods* (6th ed.). SAGE Publications.
- Zorn, T. (n.d.). *Conducting thematic analysis of interviews and field notes*. University of Waikato. <http://www.cc.utah.edu/~u0326119/Comm4170-01/resources/Thematicanalysistips.pdf>

Appendices

Appendix 1 Definitions of CAMELOT Domains

TABLE 2 Definitions of CAMELOT domains.

Domain	Definition
META domains	
Research aim and question(s)	The purpose of the study and/or what questions the researchers aim to explore.
Stakeholders	Anyone with an interest (financial or otherwise) in the findings of the research study. Stakeholders are not the same as research participants in this context. Stakeholders may include, among others, funders, patient, and public participants.
Researchers	The investigators who have designed, planned, and conducted the study and their relationship to the study question, context, and/or participants.
Context	The local, national, or international setting in which the study was conducted.
METHOD domains	
Research design domains	
Research strategy	The overall intended plan, proposal, or strategy for the study. This domain refers to the overarching roadmap for carrying out the research project (also referred to as research approach, study design, or type of study). This domain does not include issues related to participant recruitment and selection, data collection and analysis, and interpretation. These are separate domains.
Ethical considerations	How the researchers considered and incorporated ethical principles and standards into decisions related to the design, planning, and conduct of the study.
Equity, diversity, and inclusion considerations	Whether and how the researchers considered: <ol style="list-style-type: none"> (1). Equity—including distribution of power within the research context, whether there was equitable representation and participation in the research process, particularly for underrepresented groups, the possible differential experiences or perspectives of a phenomenon of interest for different populations, and whether there was and whether unnecessary or discriminating differences in how people participate in a study (2). Diversity—including seeking out diverse experiences, perspectives, and backgrounds, inclusion of participants with diverse backgrounds, and considering how diversity can influence research findings (3). Inclusion—including the degree to which the research environment was such that all participants felt welcome and valued, whether culturally sensitive and inclusive research methods and communication strategies were employed, and whether research materials, locations, and processes were accessible for all participants.
Theory	Organization of concepts, ideas, literature, or principles into systems or frameworks that attempt to describe, explore, explain, understand, or predict a phenomenon.
Research conduct domains	
Participant recruitment and selection	How participants were identified, recruited, and selected for the research study.
Data collection	The process of gathering qualitative information (data) in the form of perspectives, experiences, or opinions from participants, and/or observations, prolonged engagement in the field by researchers to explore or answer the research questions and address the research aim.
Analysis and interpretation	The process of systematically examining, exploring, and interrogating data gathered during the study to identify themes, patterns, lines of argument and, if appropriate, theories and gain a greater understanding of the phenomenon of interest.
Presentation of findings	How the findings from the study are organized and communicated and how well they appear to represent the underpinning data.

Abbreviation: CAMELOT, Cochrane qualitative Methodological Limitations Tool.

(Source: Munthe-Kaas et al., 2024, p. 11)

Appendix 2 Article Source Details (21 Studies)

Author	Year	Title	Country	Design	Sample size	Participants
Archer-Kuhn et al.	2020	Inquiry-based learning as a facilitator to student engagement in undergraduate and graduate social work programs	Canada	Mixed method	52	UG & PG Social work
Baixinho et al.	2022	Participation of nursing students in evidence-based practice projects: Results of two focus groups	Portugal	Qualitative	15	UG nursing Year 4
Bennett et al.	2022	Creating spatial, relational and cultural safety in online social work education during Covid-19	Australia	Reflection on teaching experience	No details	UG Social work
Bridges et al.	2020	Learning environments for interprofessional education: A micro-ethnography of sociomaterial assemblages in team-based learning	Hong Kong	Qualitative, micro-ethnography	437; 13	UG multi-disciplinary health professional degrees
Carroll & Morse	2022	Engaging learners in productive struggle: Escape rooms as a teaching tool	USA	Pilot study	90-150	UG Nursing
Domyancich-Lee et al.	2022	Teaching Note—Comics in the classroom: Teaching with graphic novels	USA	Narrative account of teaching strategy	No details	UG Social work
Doran et al.	2022	"Teaching in Circle" with student nurses contributes to experiential understanding of cultural safety	Australia	Qualitative	388	UG Nursing Year 1
Egonsdotter et al.	2020	Child protection and cultural awareness: Simulation-based learning	Sweden	Mixed method	176	UG Social work
Esposito & Sullivan	2020	Maintaining clinical continuity through virtual simulation during the Covid-19 pandemic	USA	Qualitative	17	UG Nursing Year 3 BN
Fox & O'Maley	2023	'If you don't have a relationship with your tutor...you don't care about the subject': revisiting the role of the teacher - getting off the 'sideline' and 'meddling in the middle'	Australia	Qualitative	8	UG Social work Year 2

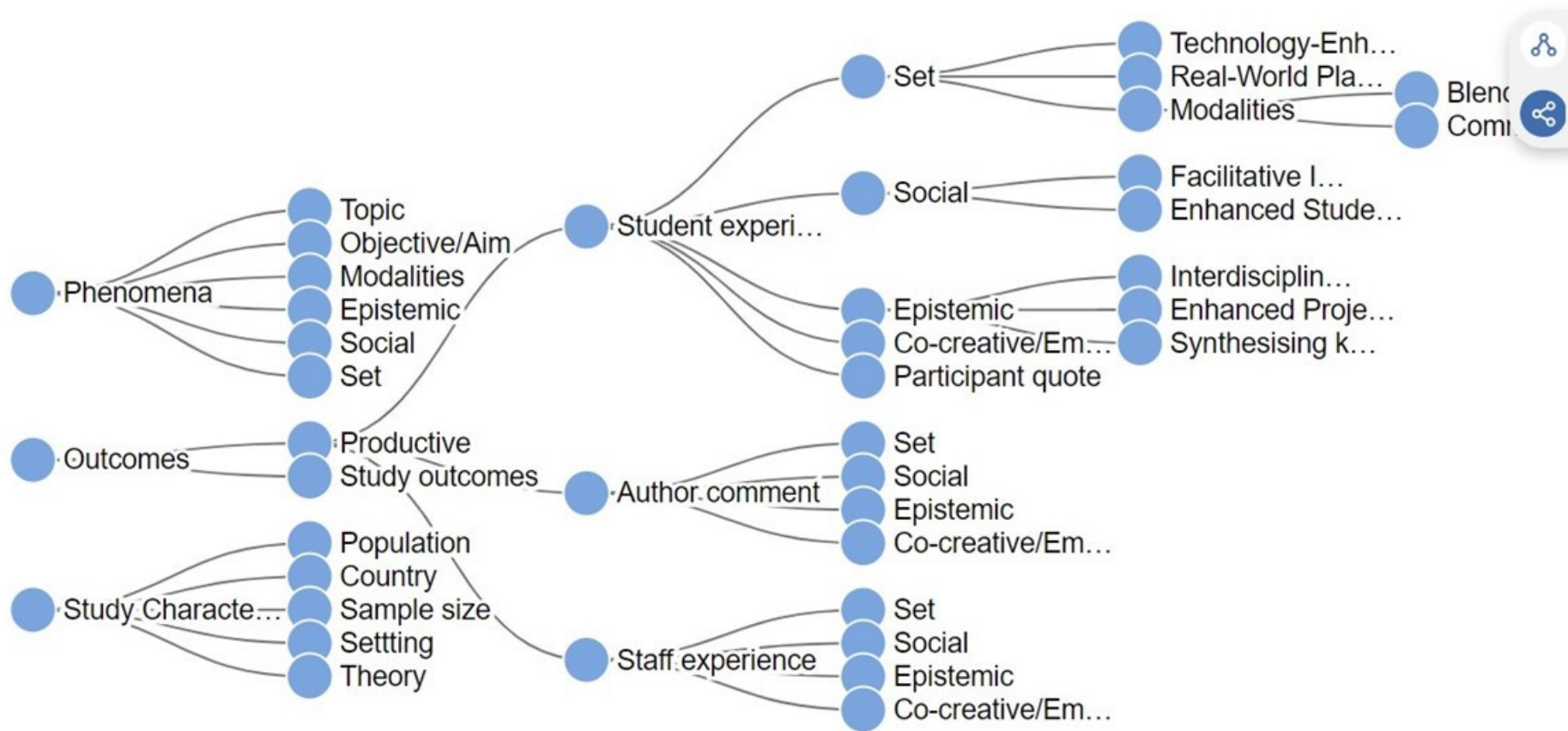
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Author	Year	Title	Country	Design	Sample size	Participants
Jenssen et al.	2024	Impact of COIL: Learning from student nurses in Norway who collaborated with U.S. students	Norway (& USA)	Qualitative	15	UG Nursing
Kumpula & Krumwiede	2023	Facilitating a virtual international experience for undergraduate students: Creating global awareness and connection	USA	Qualitative	42	UG Nursing
Mattingly	2021	Fostering cultural safety in nursing education: Experiential learning on an American Indian reservation	USA	Qualitative (intrinsic case study)	Unclear	UG Nursing
McGovern	2019	Improving undergraduate competence in multicultural gerontology practice with fresh pedagogies: A digital storytelling case example	USA	Qualitative	25	UG Social work & Interdisciplinary
Mills et al.	2022	Evaluation of a First Peoples-led, emotion-based pedagogical intervention to promote cultural safety in undergraduate non-Indigenous health professional students	Australia	Mixed methods intervention design	102	UG Nursing
Moore & Campbell	2021	Effectiveness of an escape room for undergraduate interprofessional learning: a mixed methods single group pre-post evaluation	Australia	Mixed methods	50	UG Interprofessional healthcare students
Nunev	2020	Club forms of activities and creation of educational environment promoting the development of social work students	Bulgaria	Quantitative	130	UG BSW; PG MSW
Plaza del Pino et al.	2022	Use of high-fidelity clinical simulation for the development of cultural competence of nursing students	Spain	Qualitative	56	UG Nursing Year 4 BN
Rambaree et al.	2023	Enhancing cultural empathy in international social work education through virtual reality.	Sweden	Qualitative	38	UG Social work Year 1
Reid-Searl et al.	2019	Using simulation to prepare neophyte nursing students to deliver intimate patient care	Australia	Qualitative	29	UG Nursing Year 1
Woodley	2020	Stone Soup: A metaphor to create an inclusive learning environment within nursing education	USA	Evaluation of educational innovation	258	UG Nursing

Appendix 3 Tagging to Theme Development

Appendix 3.1 NK Tag Hierarchy

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Appendix 3.2 Coding Table Showing Round 1 & 2 Codes

SLR HLE ACAD Code Analysis – Set (Rounds 1 & 2)

Set Overall Codes		Set – Ss Codes		Set - Author Codes		Set – Teacher Codes	
Round 1	Round 2	Round 1	Round 2	Round 1	Round 2	Round 1	Round 2
Preparation of students - Awareness of course approach	Flexibility of inquiry-based learning Benefit of preparation Preparation for course pedagogy	Actual clinical settings	Realistic learning; Real world; Heutagogy Experiential and intentional		Pedagogical necessities Preparation for pedagogy		
Integration - into clinical settings	Real-world learning		Significance of realistic professional practice				
Creating safe spaces online	Pedagogical necessities			Precarious access	Safety for learning and sharing in online platform sessions		
Synchronous activities Space and technology	Mapping changing configurations in learning Purposeful design of LMS Set - teaching and learning space	Furniture configuration	Non-human materiality in teaching and learning spaces				
				Combinations of innovative activities Staffing, facility requirements	Variety of teaching activities Teacher to student ratios		
Lived reality of human experience Books - graphic novel	Selecting course resources - mirroring professional and clinical realities	Accessibility; Rich learning	Realistic and rich learning; Acknowledging diverse teaching				

Appendix 3.3 Initial Themes and Codes

SLR HLE – Initial Themes and Codes (v4)

What are the characteristics of productive hybrid learning environments in higher education undergraduate healthcare contexts?

- How do learners and educators characterise productive learning activities within hybrid learning environments?
- How do learning design elements, in hybrid learning environments, influence and support learners' experiences?
- What do learners, educators and allied professional colleagues identify as contributors to productive hybrid learning environments?

Themes	Set	Social	Epistemic	Co-creative Emergent
Design for learning	Flexibility of inquiry-based learning Experiential and intentional Pedagogical necessities Pedagogical necessities Precarious access Space and technology Mapping changing configurations in learning Purposeful design of LMS Teaching and learning space and technology Furniture configuration - non-human materiality Variety of innovative teaching activities Managing student numbers in rotations Acknowledging diverse teaching and learning Extended engagement on campus Enhanced learning Pedagogical dissonance Pedagogical necessities Complex scenario Phased presentation and assessment of learning Video conferencing - teaching moments	Individual; Groups Individual then group discussions Engagement develops knowledge Engagement in shared challenge Experiential learning enhances engagement and knowledge synthesis Peer interactions for knowledge acquisition two groups of 7-8 Practical, team-based knowledge and skill development Modelling behaviour Teaching adaptations in online conference platforms Reducing power-differentials in groups - intentional design Intentional design for group learning Groups of 10 Framework for interpersonal engagement and discourse Supported practice - public speaking Individual then either seminar or focus group discussions on aggregated responses. Timely feedback to students to enhance connections Team Collaboration	Key features deemed helpful: Experiential; Intentional; Guided Peer support; Balancing power Ako in action - shared knowledge creation, knowledge developers Professor as knowledge translator rather than knowledge keeper Discovery mindset - motivation Intentional learning Facilitating group discussion Interprofessional - Interprofessional Education (with, about, from one another) Purposeful design for learning about IPE Facilitating student engagement Learner-centred productive struggle Covid-19 necessities Change of set location requires change in sequencing Experiential learning ; challenging core beliefs Recognising importance of something by its absence. Student perception of learning and assessment - 'Right answer' Integrating cultural safety and cultural awareness into learning	Adjustment to learning design Active learning leads to knowledge synthesis and influences professional practice Leadership characteristics that emerge during the team performance (high motivation, eager to succeed) led to better team performance than assigned leaders. Acknowledging sociomaterial and spatial influences on learning Experiential interactions Understanding the pedagogy to mine its depths and reap the benefits. Rich learning experiences with simulation Developing knowledge vicariously with teacher guidance. Innovation through challenge/desperation Synchronous hybrid environment created successful experiential learning Creating teachable moments Freedom in what resonates, not what is 'right' Teacher 'loan of capacity'

SLR HLE Initial Themes & Codes (v5)

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20250202

Appendix 3.4 Initial Themes and Subthemes

Design for learning	Details included (v1) (20250207)	Revisions (v2) (20250209)
D4L Establishing the learning space	Preparation of resources and faculty Modelling behaviour Decreasing power differentials Interprofessional practice Supportive for deep learning Stakeholder involvement Rules of engagement (kaupapa) Overcoming challenges of learning space Timings Safe learning spaces (psychologically, culturally, safe mistakes, colonised, peer support; Countered: Mills - fire!)	D1.1 Preparation of resources, students, faculty & teaching space D1.2 Modelling behaviour D1.3 Decreasing power differentials D1.4 Preparation for inter/intra professional practice D1.5 Supportive for deep learning D1.6 Stakeholder involvement D1.7 Rules of engagement (kaupapa) D1.8 Overcoming challenges of learning space D1.9 Timings, synch/async, scheduling D1.10 Safe learning spaces (psychologically, culturally, safe mistakes, colonised, peer support; Countered: Doran - fire!)
D4L Effective teaching/facilitation is paramount	Faculty professional development - needs assessments Staffing, Fluid roles Ako - reciprocity Appropriate and timely feedback Clear communication Pedagogical requirements Sequencing of content Subliminal learning	D2.1 Faculty professional development - needs assessments D2.2 Staffing, Fluid roles D2.3 Ako - reciprocity D2.4 Appropriate support and timely feedback D2.5 Clear communication D2.6 Pedagogical requirements D2.7 Sequencing of content D2.8 Subliminal learning
D4L Intentional challenge	Designed, purposeful challenges for students Controlled disorientation Visceral Increased cultural awareness Challenge → prepared for professional practice	D3.1 Designed, purposeful challenges for students D3.2 Controlled disorientation and disequilibrium D3.3 Visceral D3.4 Increased cultural awareness D3.5 Challenge → prepared for professional practice

Design for learning	Details included (v1) (20250207)	Revisions (v2) (20250209)
D4L Contributors to productive learning environments and conviviality (Social aspects)	Comradery Empathy Connectedness Subliminal friendships Cohesion Laughter	D4.1 Comradery D4.2 Empathy D4.3 Connectedness D4.4 Subliminal friendships D4.5 Cohesion D4.6 Laughter D4.7 Enhanced learning
D4L Heutagogy - an uncommon experience	Student agency Autonomy An uncommon experience	D5.1 Student agency D5.2 Autonomy D5.3 An uncommon experience

Preparation for professional practice		
PPP Rich, realistic learning and teaching	Equipment, props, documents, cases, resources Simulation Evidence-based practice Patient outcomes Database use Socialising into professional role Competence Reflection (blogs) Effective interprofessional communication MaskEd jumpstarts professional practice	P6.1 Equipment, props, documents, cases, resources P6.2 Simulation and debriefing P6.3 Evidence-based practice P6.4 Patient outcomes P6.5 Database use [move to 6.1] P6.6 Socialising into professional role P6.7 Competence P6.8 Reflection P6.9 Effective interprofessional practice P6.10 Effective professional practice P6.11 Evidence of productive learning
PPP Transformational learning	Revealing personal bias (safely) Historical trauma Power imbalance Making a difference Constellations increase awareness Patient-as-expert	P7.1 Revealing personal bias (safely) P7.2 Historical trauma P7.3 Power imbalance (privilege/oppression) P7.4 Making a difference P7.5 Professional conversations - increased awareness P7.6 Patient-as-expert P7.7 Knowledge application/expanded P7.8 Culturally safe practice

Appendix 3.5 Initial Theme Generation

SLR HLE ACAD Initial theme generation – Design for learning

Design for learning | Preparation | Realistic | Heutagogy | Safety | Hybridity | Knowledge transfer/synthesis for prof practice

Initial theme	Design for learning	
ACAD & Perspective	Cocreative/Emergent - Overall	
Source	Code	Data extracts
Archer-Kuhn, B Set	Flexibility of inquiry-based learning	The study was conducted in varied settings (on-campus, in community, and study abroad), and across various degree levels (undergraduate, graduate, and doctoral) in social work education.
Baixinho, C.L. Set	Pedagogical necessities	Creating safe space for Yarning was not always easy; more research with students is needed to define the parameters of online safety and the techniques social work educators will need to develop and share.
Bridges, S Set	Mapping changing configurations in learning	We then generated graphic representations of the changing physical configurations of the groups' material environments (moveable chairs, bags, laptops and other mobile devices etc.) and anchored this to the discourse (transcribed talk) and actions of participants (timed synchronous online activity, student non-verbal gestures viz gaze) for interpretive analysis (see Fig. 3)
Bridges, S Set	Purposeful design of LMS	In the virtual space (see Fig. 2), all the teams moved synchronously through the team-based learning steps using a purpose-designed online Learning Platform (LAMS).
Bridges, S Set	Teaching and learning space and technology	The physical space as illustrated in Fig. 1 consisted of one large arena with eight projection screens (4 in front, 4 at the back) encompassing four lecture halls.
Doran, F Set	Extended engagement on campus	face-to-face tutorials in these two units across a 12-week teaching session in 2019.
Esposito, C.P. Set	Video conferencing - teaching moments	The virtual SIMs were executed by the clinical faculty, on the originally scheduled clinical day, through video-conferencing . Faculty and students collectively reviewed the case study and their individual care plans before viewing and immediately debriefing a series of videos.
Esposito, C.P. Set	Case study	The virtual SIMs were executed by the clinical faculty, on the originally scheduled clinical day, through video-conferencing . Faculty and students collectively reviewed the case study and their individual care plans before viewing and immediately debriefing a series of videos.
Egonsdotter, G. Set	Complex scenario	... based on a reasonable model of a given professional context, a defined role and tasked with arriving at decisions by analyzing a complex context
Fox, J Set	Teacher modelling dialectical unbundling	the lecturer modelled the dialectical unbundling of the relationships that constituted key concepts, drawing and expanding constellations of relations on the whiteboard
Jenssen, U. Set	Case study	... a case study on homelessness

Appendix 3.6 Potential Themes

SLR HLE ACAD Potential theme generation

Design for learning | Preparation | Realistic | Heutagogy | Safety | Hybridity | Knowledge transfer/synthesis for prof practice

1 Establishing the learning space

Potential theme	Establishing the learning space		
D4L 1.1 Preparation of resources, students, faculty and learning spaces (Overall)			
	Source	Code	Data extracts
	Archer-Kuhn, B Set	Flexibility of inquiry-based learning	The study was conducted in varied settings (on-campus, in community, and study abroad), and across various degree levels (undergraduate, graduate, and doctoral) in social work education.
	Bridges, S Set	Teaching and learning space and technology	The physical space as illustrated in Fig. 1 consisted of one large arena with eight projection screens (4 in front, 4 at the back) encompassing four lecture halls.
	Esposito, C.P. Set	Case study	The <i>virtual SIMs</i> (Crafted by faculty) were executed by the clinical faculty, on the originally scheduled clinical day, through video-conferencing . Faculty and students collectively reviewed the case study and their individual care plans before viewing and immediately debriefing a series of videos.
	Jenssen, U. Set	Case study	... a case study on homelessness
	Bennett, B. Social	Teaching adaptations in online conference platforms	<i>Online teaching requires educators and students to change their spatial and relational interactions into a computer or phone screen.</i>
	Domvancich-Lee, S.C. Social	Framework for interpersonal engagement and discourse	graphic novels provide a framework for interpersonal engagement and discourse
	McGovern, J. Social	Random assigned groups	Students were randomly assigned to work groups, which stayed together for the duration of the project
	Reid-Searl, K. Social	Vignette	Muriel Moore; <i>MaskEd</i> character with back story
	Archer-Kuhn, Beth Co-creation/Emergent	Adjustment to learning design	Four themes emerged from the data analysis: (1) experience of inquiry-based learning, (2) adjustments required for learning process, ...
	Archer-Kuhn, B Set	Benefit of preparation for course pedagogy	<i>...introductory resources that provided an overview of inquiry-based learning, not everyone took time to understand the approach prior to the beginning of</i>

Appendix 4 Participant Documents

Participant Information Sheet (A)

Research Project: Productive hybrid learning environments

INFORMATION SHEET (Individual Interview)

Researcher Introduction: My name is Jenny Green. I am a researcher and doctoral candidate at Massey University, Auckland. I have been involved in nursing education for over 15 years and have seen a move from the occasional use of technology in learning to the present where there has been an urgent need to move to an online environment in times of lockdown due to Covid-19 restrictions.

Project Description: For the purposes of this study, a hybrid learning environment is one in which there are both online and face-to-face interactions within a course. In any educational setting there are many aspects that support learning, collaboration and connections between students and educators. There are also aspects that create challenges to productive learning activity and co-creation of knowledge. I am interested in finding out from you what contributes to your learning, or teaching, when technology is part of the learning environment. Productive learning environments involve digital and material tools, pedagogy and people engaged in collaborative work to co-create through knowledge building processes. What makes it a productive hybrid learning environment for you? Data will be collected through an individual/small group, in person or video meeting, at a time and place to fit in with your schedule.

Data Collection:

The study is collecting a variety of data through observation of [REDACTED] sites and classroom sessions (audio recorded), interviews and focus groups. Data collection will be carried out by me as the researcher or by a research assistant.

Invitation: You are invited to participate in this doctoral research project which is being conducted at [REDACTED]. Your participation is entirely voluntary, and you have the right to withdraw at any stage prior to commencement of data analysis. If you choose to withdraw, any information collected from you will be removed from the study.

Your voluntary involvement in this study will involve participation in an individual, online, informal video interview lasting about 30-60 and 15-minutes reviewing, editing, and commenting on the interview transcript, if you wish.

An assigned research participant ID will be used to refer to your contribution and maintain your anonymity. During the interview, I will start by briefly

introducing the key factors in the study and you will have an opportunity to clarify these.

Our discussion of your experiences will be led by you and will follow the thoughts, ideas, and topics you present in the stories of your experiences. You will control how much you share and whether you wish to keep talking about any aspect of your experience.

At any stage, if you are uncomfortable, the interview will stop and only continue if you are comfortable with how it will proceed. The interview will be recorded with your permission. The recording will be identified by an assigned research participant ID to maintain your anonymity. I will be the only person with access to the original recording, and I will ensure complete confidentiality. If you wish the recording to pause or stop, please feel free to say so at any point.

You will be invited to review the transcript of your interview and comment on it. You will be offered a summary of the findings at the conclusion of the project. You can contact the researcher Jenny Green at j.k.green@massey.ac.nz

Data Management

The privacy of your identity will be strictly maintained during and after the study, including in any publication of the findings from this research. Soft copy files will be stored on password protected computers. Transcripts will use assigned research participant IDs, thus all collected information will be kept confidential. No names will be included in the research report as part of the overall results.

After analysing the data, all hard copies will be safely stored at a secure Massey University data storage room for 5 years and then destroyed in accordance with Massey University regulations. The researcher, Jenny Green, will be the only person who knows your identity. The assigned research participant ID will be used to refer to your contribution in the interview. Dr Lucila Carvalho, the supervisor of the study will have access only to anonymised data.

Participant Identification and Recruitment

To participate in this study, you must:

- *Be a student or staff member associated with the [REDACTED]*
- *Be over 16 years;*
- *Complete and return the Participant Consent Form – note that, to maintain your privacy and the anonymity of your contribution, gender and the ethnicity(ies), with which you most closely identify will only be referred to by your assigned research participant ID in the report.*

A variety of participants, students, lecturers, and [REDACTED] staff associated with the courses or learners, are needed for this study to provide a breadth of data which will contribute to credible findings.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any question;
- withdraw from the study (before, during, or up to two weeks after data collection);
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used;
- be given a transcript of our interview to comment on, edit, and approve for use;
- be given access to a summary of the project findings by providing your contact details on the transcript release form;
- ask for the recording device to be turned off at any time during the interview;
- seek support from appropriate people outside of the study for any personal issues that arise as a result of participating.

Project Contacts

Jenny Green j.k.green@massey.ac.nz is carrying out this project as a requirement for the Doctor of Philosophy in Nursing Education under the supervision of Dr Lucila Carvalho, who can be contacted at l.carvalho@massey.ac.nz Both the researcher and the supervisor are happy to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 20/61. If you have any concerns about the conduct of this research, please contact Dr Fiona Te Momo, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800, x 43347, email humanethicsnorth@massey.ac.nz

Participant Consent Form (A)

Productive hybrid learning environments



INDIVIDUAL PARTICIPANT CONSENT FORM

I have read or have had read to me in my first language and understand the Information Sheet attached. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time before, during, or up to two weeks after data collection.

(Please tick your chosen response)

1. I agree / do not agree to the interview being recorded.
2. I would like / would not like to review the interview transcript and have an opportunity to comment on it.
3. I agree to participate in this study under the conditions set out in the Individual Interview Information Sheet.

Declaration by Participant:

I _____ hereby consent to take part in this study.
Print full name

Contact Email: _____

Signature: _____ Date: _____

Participant Information Sheet (B)

Productive hybrid learning environments



COLLEGE
OF HEALTH
TE KURA MAUORA TANGATA

FOCUS GROUP SHEET

Researcher Introduction: My name is Jenny Green. I am a researcher and doctoral candidate at Massey University, Auckland. I have been involved in nursing education for over 15 years and have seen a move from the occasional use of technology in learning to the present where there has been an urgent need to move to an online environment in times of lockdown due to Covid-19 restrictions.

Project Description: For the purposes of this study, a hybrid learning environment is one in which there is both online and face-to-face interactions within a course. In any educational setting there are many aspects that support learning, collaboration and connections between students and educators. There are also aspects that create challenges to productive learning activity. I am interested in finding out from you what contributes to your learning, or teaching, when technology is part of your learning environment. Productive learning environments involve digital and material tools, pedagogy and people engaged in collaborative work to co-create through knowledge building processes. What makes it a productive hybrid learning environment for you? Data will be collected through individual or small focus group video meetings at a time and place to fit in with your schedule.

Data Collection:

The study is collecting a variety of data through observation of [REDACTED] sites and classroom sessions (audio recorded), interviews and focus groups. Data collection will be carried out by me as the researcher or by a research assistant.

Invitation: You are invited to participate in this doctoral research project which is being conducted through [REDACTED]. Your participation is voluntary and you have the right to withdraw prior to group discussion, or cease your contributions during the discussion, but you cannot withdraw your contribution after the meeting because this would affect the interpretation of the group dynamic. If you choose to withdraw, any information collected from you will be removed from the study.

Your voluntary involvement in this study will be in a group, online, informal video discussion lasting about 60 minutes and 15 minutes to review emerging themes after analysis via email, if you wish.

An assigned research participant ID will be used to refer to your contribution and to maintain your anonymity. During the interview, I will start by briefly introducing the key factors in the study and you will have an opportunity to clarify these.

Our discussion of your experience will be led by you and will follow the thoughts, ideas, and topics you present in the stories of your experiences. You will control how much you share and whether you wish to keep talking about any aspect of your experience.

At any stage, if you are uncomfortable, the interview will stop and only continue if you are comfortable with how it will proceed. The interview will be recorded with your permission. The recording will be identified by an assigned research participant ID to maintain your anonymity. I will be the only person with access to the original recording and I will ensure complete confidentiality. If you wish the recording to pause or stop, please feel free to say so at any point.

You will be invited to review the themes arising from the discussion and have an opportunity to comment on them. If you choose to review these themes you will be asked to respond to this invitation via email.

You may receive a summary of the findings by contacting the researcher, Jenny Green, at the conclusion of the project. You can contact Jenny at j.k.green@massey.ac.nz

Data Management

The privacy of your identity will be strictly maintained during and after the study, including in any publication of the findings from this research. Soft copy files will be stored on password protected computers. Transcripts will use assigned research participant IDs, thus all collected information will be kept confidential. No names will be included in the research report as part of the overall results.

After analysing the data, all hard copies will be safely stored at a secure Massey University data storage room for 5 years and then destroyed in accordance with Massey University regulations. The researcher, Jenny Green, will be the only person who knows your identity. The assigned research participant ID will be used to refer to your contribution in the interview. Dr Lucila Carvalho, the supervisor of the study, will have access only to anonymised data.

Participant Identification and Recruitment

To participate in this study, you must:

- *Be a student or staff member in the [REDACTED];*
- *Be over 16 years;*
- *Complete and return the attached Participant Consent Form – note that, to maintain your privacy and the anonymity of your contribution, gender and the ethnicity(ies), with which you most closely identify will only be referred to by your assigned research participant ID in the report.*

A variety of participants, students, lecturers, and [REDACTED] staff associated with the course, are needed for this study to provide a breadth of data which will contribute to credible findings.

In recognition of your time and effort, you will receive a \$20 voucher for a supermarket in Aotearoa/New Zealand of your choice.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any question;
- withdraw from the study (prior to group discussion, or cease your contributions during the discussion, but you cannot withdraw your contribution after the meeting because this would affect the interpretation of the group dynamic);
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used;
- be given access to a summary of the project findings by emailing your contact details to the researcher;
- ask for the recording device to be turned off at any time during the interview;
- seek support from appropriate people outside of the study for any personal issues that arise as a result of participating.

Project Contacts

Jenny Green j.k.green@massey.ac.nz is carrying out this project as a requirement for the Doctor of Philosophy in Nursing Education under the supervision of Dr Lucila Carvalho, who can be contacted at l.carvalho@massey.ac.nz Both the researcher and the supervisor are happy to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 20/61. If you have any concerns about the conduct of this research, please contact Dr Fiona Te Momo, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800, x 43347, email humanethicsnorth@massey.ac.nz

Participant Consent Form (B)

Productive hybrid learning environments



COLLEGE
OF HEALTH
TE KURA HAUORA TANGATA

FOCUS GROUP PARTICIPANT CONSENT FORM

I have read or have had read to me in my first language and understand the Information Sheet attached. I have had the details of the study explained to me. Any questions I had have been answered to my satisfaction and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time prior to group discussion, or cease contributions during the discussion, but I cannot withdraw my contribution to the group dynamic.

(Please tick your chosen responses)

1. I agree / do not agree to the focus group being recorded.
2. I would like / would not like to review the themes arising from the focus group discussion and have an opportunity to comment on them.
3. I guarantee confidentiality of information and agree to not disclose the identities of other participants in the Focus Group unless this is agreed to by the individual group members.
4. I agree / do not agree to participate in this study under the conditions set out in the Focus Group Information Sheet.

Declaration by Participant:

I _____ hereby consent to take part in this study.

Print full name

Contact Email: _____

Signature: _____

Date: _____

Participant Information Sheet (C)

Research Project: Productive hybrid learning environments



COLLEGE
OF HEALTH
TE KŪLA HAUORA TANGATA

INFORMATION SHEET (Lecturer – Classroom and [REDACTED] Site Observation)

Researcher Introduction: My name is Jenny Green. I am a researcher and doctoral candidate at Massey University, Auckland. I have been involved in nursing education for over 15 years and have seen a move from the occasional use of technology in learning to the present where there has been an urgent need to move to an online environment in times of lockdown due to Covid-19 restrictions.

Project Description: For the purposes of this study, a hybrid learning environment is one in which there is both online and face-to-face interactions within a course. In any educational setting there are many aspects that support learning, collaboration and connections between students and educators. There are also aspects that create challenges to productive learning activity and co-creation of knowledge. I am interested in observing learning design elements in your [REDACTED] site and classroom lecturing space.

I would like to observe your course's [REDACTED] site to look specifically at the following learning design elements:

- *Set design:* The design of elements in hybrid learning space (both online and face-to-face) – including digital and material tools, resources and artefacts, the furniture or learning items used, how items are positioned in [REDACTED];
- *Epistemic design:* The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources to support students' learning activities;
- *Social design:* The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration, and student roles in group activities;
- *Co-creation and co-configuration activity* at learn time: Co-creation of knowledge that emerges within a learning experience and activity, the agency of learners.

I would like to look at these learning design features and activities in both the [REDACTED] site and in your classroom lecture space.

Data Collection:

My focus would be on observing the enactment of course design – for example focusing on how various elements (digital and material resources, types of learning tasks, and specific group arrangements) come into play and are

orchestrated during face-to-face or virtual sessions. Data collection will be carried out by me as the researcher.

A short video presentation of this research will be included on the x[REDACTED] site.

In the physical classroom setting, I will focus my observations on the lectern side of the room. To opt out from these observations students might choose to sit on the opposite side of the room. A reminder will be given at the beginning of the sessions in which the researcher is present.

If this is in a physical space and face-to-face lecturing, I will either use the audio from the lecture capture recording or use a microphone worn by the lecturer to record her/his presentation.

If the lecture is in a Zoom room, I will observe the enactment of the learning design features and visit breakout rooms of only those students who have indicated their consent to participate.

In the x[REDACTED] site, I will focus my observations on elements of the platform and activity by students (e.g. entries in the discussion forum). To opt out from these observations, the students are requested to please send me an email indicating their decision to opt out. I will not have access to assessment submissions and grades.

Invitation: I would like to invite you to participate in doctoral research project which is being conducted at x[REDACTED]. Your participation is entirely voluntary, and you have the right to withdraw at any stage prior to commencement of data analysis. If you choose to withdraw, any information collected from you will be removed from the study.

Your voluntary involvement in this study will involve the researcher observing two to five hours of lecture-time in your course and reviewing your course [REDACTED] site to observe learning design features.

At any stage, if you or the students become uncomfortable, the observation will stop and only continue if you are comfortable with how it will proceed. I will ensure complete confidentiality.

You will be invited to review and comment on emerging themes after analysis. You will be offered a summary of the findings, at the conclusion of the project. You can contact the researcher Jenny Green at j.k.green@massey.ac.nz

Data Management

The privacy of your identity, and that of the course, will be strictly maintained during and after the study, including in any publication of the findings from this research. Soft copy files will be stored on password protected computers. All collected information will be kept confidential. No names will be included in the research report as part of the overall results.

After analysing the data, all hard copies will be safely stored at a secure Massey University data storage room for 5 years and then destroyed in accordance with Massey University regulations. The researcher, Jenny Green, will be the only person who knows your identity. An assigned research participant ID will be provided to refer to your contribution and to maintain your anonymity. Dr Lucila Carvalho, the supervisor of the study will have access only to anonymised data.

Participant Identification and Recruitment

To participate in this study, you must:

- *Be a student or staff member in the x*
- *Be over 16 years;*
- *Complete and return the Participant Consent Form – note that, to maintain your privacy and the anonymity of your contribution, gender and the ethnicity(ies), with which you most closely identify will only be referred to by your assigned research participant ID in the report.*

A variety of participants, students, lecturers, and staff associated with the course, are needed for this study, to provide a breadth of data which will contribute to credible findings.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- withdraw from the study (prior to, or during, or up to two weeks after classroom observation);
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used;
- ask for the recording device to be turned off at any time during the lecture;
- be given a transcript of the lecture audio to comment on, edit, and approve for use;
- be given access to a summary of the project findings by providing your contact details on the transcript release form;
- seek support from appropriate people outside of the study for any personal issues that arise as a result of participating.

Project Contacts

Jenny Green j.k.green@massey.ac.nz is carrying out this project as a requirement for the Doctor of Philosophy in Nursing Education under the supervision of Dr Lucila Carvalho, who can be contacted at l.carvalho@massey.ac.nz Both the researcher and the supervisor are happy to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 20/61. If you have any concerns about the conduct of this research, please contact Dr Fiona Te Momo, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800, x 43347, email humanethicsnorth@massey.ac.nz

Participant Consent Form (C)

Productive hybrid learning environments



COLLEGE
OF HEALTH
TE KURA HAUORA TANGATA

LECTURE SPACE / x [REDACTED] SITE OBSERVATION - CONSENT FORM

I have read or have had read to me in my first language, and I understand the Lecture Space/[REDACTED] Site Observation Information Sheet attached. I have had the details of the study explained to me. Any questions I had have been answered to my satisfaction and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time before, during, or up to two weeks after data collection.

(Please circle your chosen response)

1. I **agree** / **do not agree** to the researcher observing my lecture space.
2. I **agree** / **do not agree** to the researcher accessing my course x [REDACTED] site.
3. I **agree** / **do not agree** to participate in this study under the conditions set out in the Lecture Space/[REDACTED] Site Observation Information Sheet.

Declaration by Participant:

I _____ hereby consent to take part in this study.

Print full name

Email: _____

Signature: _____ Date: _____

(Please print and complete and sign and scan, OR complete electronically and sign, and return to j.k.green@massey.ac.nz Following this, I will contact you to arrange a time to observe your lecture space. Thank you.)

Participant Information Sheet (D)



Research Project: Productive hybrid learning environments

INFORMATION SHEET (Student – Classroom & x[REDACTED] Site Observation)

Researcher Introduction: My name is Jenny Green. I am a researcher and doctoral student at Massey University, Auckland. I have been involved in healthcare education for over 15 years and have seen a move from the occasional use of technology in learning to the present where there has been an urgent need to move to an online environment in times of lockdown due to Covid-19 restrictions.

Project Description:

I am wanting to find out what works best in hybrid learning environments, those with both online and face-to-face interactions within a course. What learning design aspects will support your learning, collaboration and connection with other students and your lecturers?

I am interested in observing your course's x[REDACTED] site to look specifically at the following learning design elements:

- *Set design:* The design of elements in hybrid learning space (both online and face-to-face) – including digital and material tools, resources and artefacts, the furniture or learning items used, how items are positioned in x[REDACTED]
- *Epistemic design:* The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources to support students' learning activities;
- *Social design:* The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration, and student roles in group activities;
- *Co-creation and co-configuration activity* at learn time: Co-creation of knowledge that emerges within a learning experience and activity, the agency of learners.

I would like to look at these learning design features and activities in both the x[REDACTED] site and in your classroom lecture space. I will have guest access to x[REDACTED]

which will allow me to have access to course content but will prevent me from seeing your assessment submissions and grades.

Data Collection:

The study is collecting a variety of data through x[REDACTED] site and classroom observations, audio recording, interviews and focus groups. Data collection will be carried out by me as the researcher or by a research assistant.

Invitation: You are invited to participate in this doctoral research project which is being conducted at x[REDACTED]. Your participation is entirely voluntary, and you have the right to withdraw at any stage prior to commencement of data analysis. If you choose to withdraw, any information collected from you will be removed from the study.

In the physical classroom setting, I will focus my observations on the lectern side of the room. To opt out from these observations you might choose to sit on the opposite side of the room during these sessions. A reminder will be given at the beginning of the sessions in which the researcher is present.

In the [REDACTED] site, I will focus my observations on elements of the platform and activity by students (e.g. entries in the discussion forum). To opt out from these observations, please send me an email indicating your decision to opt out.

You can contact the researcher Jenny Green at j.k.green@massey.ac.nz

Data Management

The privacy of your identity will be strictly maintained during and after the study, including in any publication of the findings from this research. Soft copy files will be stored on password protected computers. All collected information will be kept confidential. No names will be included in the research report as part of the overall results.

After analysing the data, all hard copies will be safely stored at a secure Massey University data storage room for 5 years and then destroyed in accordance with Massey University regulations. The researcher, Jenny Green, will be the only person who knows your identity. An assigned research participant ID will be provided to refer to your contribution and to maintain your anonymity. Dr Lucila Carvalho, the supervisor of the study will have access only to anonymised data.

Participant Identification and Recruitment

To participate in this study, you must:

- *Be a student or staff member in the x[REDACTED]*
- *Be over 16 years;*
- *Complete and return the Participant Consent Form – note that, to maintain your privacy and the anonymity of your contribution, gender and the ethnicity(ies), with which you most closely identify will only be referred to by your assigned research participant ID in the report.*

A variety of participants, students, lecturers, and x[REDACTED] staff associated with the course, are needed for this study, to provide a breadth of data which will contribute to credible findings.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- withdraw from the study (prior to classroom observation by choosing to sit away from the lectern (in face-to-face sessions) or by emailing the researcher to opt out of the study ([REDACTED] and Zoom);
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used;
- ask for the recording device to be turned off at any time during the lecture;
- be given access to a summary of the project findings by emailing your contact details to the researcher;
- seek support from appropriate people outside of the study for any personal issues that arise as a result of participating.

Project Contacts

Jenny Green j.k.green@massey.ac.nz is carrying out this project as a requirement for the Doctor of Philosophy in Nursing Education under the supervision of Dr Lucila Carvalho, who can be contacted at l.carvalho@massey.ac.nz Both the researcher and the supervisor are happy to discuss any concerns you may have about participation in the project.

This project has been reviewed and approved by the Massey University Human Ethics Committee: Northern, Application NOR 20/61. If you have any concerns about the conduct of this research, please contact Dr Fiona Te Momo, Chair, Massey University Human Ethics Committee: Northern, telephone 09 414 0800, x 43347, email humanethicsnorth@massey.ac.nz

Participant Consent Form (D)



COLLEGE
OF HEALTH
TE KURA HAIOHA TANGATA

Productive hybrid learning environments

(Text to be posted on X, and scripted as part of a video)

LECTURE SPACE / SITE OBSERVATION - CONSENT FORM (Student)

Unless you contact the researcher to indicate your decision to opt out of the study, it will be assumed that you have read or have had read to you in your first language, and you understand the Lecture Space/ Site Observation (Student) Information Sheet attached. You have had the details of the study explained to you. Any questions you had have been answered to your satisfaction and you understand that you may ask further questions at any time. You have been given sufficient time to consider whether to participate in this study and you understand participation is voluntary and that you may withdraw from the study at any time prior to classroom observation by contacting the researcher and asking to opt out.

In the physical classroom setting, the researcher will focus their observations on the lectern side of the room. To opt out from these observations you might choose to sit on the opposite side of the room during these sessions. A reminder will be given at the beginning of the sessions in which the researcher is present.

In the site, the researcher will focus their observations on elements of the platform and activity by students (e.g. entries in the discussion forum). To opt out from these observations, please send the researcher an email indicating your decision to opt out.

Jenny Green (PhD researcher): j.k.green@massey.ac.nz

Appendix 5 Interview Schedules

Productive Hybrid Learning Environments

Interview Protocol – Lecturers / Learning Facilitators / Tutors

This is a semi-structured interview protocol designed to examine lecturer, learning facilitator and tutor perceptions of their interactions and learning processes within the environment and of the course in general. The hui process will provide a kaupapa for the interview. The types of questions I intend to ask include:

A. Mihi / whakawhanaungatanga / kaupapa

Welcome, connections

Purpose of this interview

B. History with the environment

How long have you been involved in this course?

When was the current hybrid format of this course established?

What were the initial drivers for offering this course in this format?

Contextual aspects – Historical, Educational, Discipline, Learner population, Relevant research.

C. Perceptions of the environment

How would you describe the learning environment of this course to someone who has never heard of it?

What would be the most important information a new lecturer/tutor should know about the learning environment of this course?

What should one do (or be prepared to do) before facilitating learning in this hybrid learning environment course?

Can you tell me three words that define this learning environment?

D. Value of the environment

What makes this learning environment special? Why is this learning environment meaningful?

How does the learning environment affect your professional experience, your skills, your feelings, your inspiration, and/or your professional identity?

Can you give me an example of a significant event, moments of lecturing or facilitation, and/or experiences you have had within this course's learning environment? Why was this significant?

E. Interactions with the environment

What would successful engagement in learning look and sound like to you?

Did you plan any special features or do you use strategies to promote student/staff interactions?

Describe an average visit to the learning environment? What activities or interaction would you expect to have within this learning environment?

What is the most useful feature/aspect of the course learning environment? Why do you think this is important?

F. Interactions with other members

How do you collaborate with other teachers in this environment? What strategies do you use to make this a successful collaboration? How can you tell if they are effective?

How do you think your facilitation of this learning environment affects or influences interactions between people involved in the course?

G. Learning

How does the course's learning environment promote/encourage learning?

How do you think that learning takes place within this learning environment?

What do students learn as a result of their participation within this learning environment?

H. Background

Please respond to any of the following...

Which decade were you born in?

What is your occupation? Length of time working in HE? Length of time in this role?

What is your highest qualification?

Level 1 - 4 Certificate

Level 5 Diploma

Level 6 Diploma

Bachelor's Degree or Level 17 qualification

Bachelor Honours Degree or Postgraduate Certificate/Diploma

Master's Degree

PhD

other...

Gender Identity:

Female

Male

Gender diverse

Choose not to answer

Which ethnic group do you belong to? _____

I. Poroporoaki

Productive Hybrid Learning Environments

Interview Protocol – Designers of the Learning Environment

This is a semi-structured interview protocol designed to examine learning designer perceptions of the design for learning, interactions and learning processes occurring within the environment and of the course in general. The hui process will provide a kaupapa for the interview. Below are some of the aspects we might discuss. Feel free to highlight which ones you feel are most important.

A. Mihi / whakawhanaungatanga / kaupapa

Welcome, connections

Purpose of this interview: The reach of technology extends beyond on-off campus at MU. There are now intrinsic connections between digital, material, social as an ecology of aspects, in multiple spaces, where people are co-present. I'm interested in hearing your view of this hybridity and how it influences your engagement with students, teaching staff, and with learning. Focus is on social work, nursing and sports exercise nutrition courses.

B. History with the environment

How long have you been involved in development of [redacted] courses?

When was the current hybrid format of these courses established?

What were the initial drivers for offering this course in this format? What were the motivations and expectations?

Relevant contextual aspects – Historical, Educational, Discipline, Learner population, Relevant research.

C. Perceptions of the environment

How would you describe the current learning environment of the [redacted] courses? (Three key words)

What would be the most important information a new designer or lecturer should know about these learning environments?

D. Value of the environment

What makes these learning environments special? Why makes them meaningful?

How do the learning environments affect your professional experience, your skills, your feelings, your inspiration, and/or your professional identity?

Can you give me an example of a significant event, moments of design collaboration and/or experiences you had while designing this course's learning environment? Why was this significant?

E. Interactions with the environment

What special features, or strategies, promote participant engagement and interactions? How can you tell if they are effective?

What is the most useful feature/aspect of the course learning environment? Why do you think this is important?

Describe an average visit to a learning environment? What activities or interactions would you expect participants to have within this learning environment?

F. Interactions with other members

How do participants collaborate within this environment?

What features of this learning environment support successful collaboration? What strategies are used? How can you tell if they are effective?

How do you think your design of this learning environment affects or influences interactions between people involved in the course?

G. Learning

How does the course's learning environment promote/encourage learning?

How do you think that learning takes place?

What do you believe that people learn as a result of their participation within this learning environment?

Any other aspects you would like to discuss in your design for learning?

H. Background

Please respond to any of the following...

Which decade were you born in?

What is your occupation? Length of time working in HE? Length of time in this role?

What is your highest qualification?

Level 1 - 4 Certificate

Level 5 Diploma

- Level 6 Diploma
- Bachelor's Degree or Level 17 qualification
- Bachelor Honours Degree or Postgraduate Certificate/Diploma
- Master's Degree
- PhD
- other...

Gender Identity:

- Female
- Male
- Gender diverse
- Choose not to answer

Which ethnic group do you belong to? _____

I. Poroporoaki

Productive Hybrid Learning Environments

Interview Protocol – Academic support staff (Advisers, Librarians, Student support)

This is a semi-structured interview protocol designed to examine learning designer perceptions of the design, interactions and learning processes occurring within the environment and of the course in general. The hui process will provide a kaupapa for the interview and the aspects that we might discuss.

A. Mihi / whakawhanaungatanga / kaupapa

Welcome, connections

Purpose: In university courses we now have a variety of learning resources and ways of learning. There are combinations of face-to-face and online interactions, digital and materials resources, individual and collaborative group activities. This combination of all the varying elements is known as a hybrid learning environment. I'm interested in hearing your view of this hybridity and how it influences your engagement with students and with learning. My focus is on social work, nursing and sports exercise nutrition courses.

B. History with the environment

How long have you been supporting students in [redacted] courses?

What is the nature of the support that you provide – specifically for social work, nursing and sports exercise & nutrition courses?

Contextual aspects you are aware of: Historical, Educational, Discipline, Learner population, Relevant research.

C. Perceptions of the environment

How would you describe the course learning environments for the students who seek your support?

Thinking about the students that you support – who are they? In what ways are they similar? In what ways are they different?

What are the challenges that students face? Suggestions for solutions.

What are the challenges that lecturers/tutors face? Suggestions for solutions.

What are the challenges that people in your role face? Suggestions for solutions.

What would be the most important information a new (student support person) should know about the learning environments of courses in the [redacted] division?

What is key for you, in terms of preparation, before supporting students in [redacted] hybrid learning environment courses?

Can you tell me three words to indicate what is most important for supporting students?

D. Value of the environment

What makes the [redacted] learning environments special? In what ways do you see that these learning environments meaningful to the students?

How does supporting students in these learning environments affect your professional experience, your skills, your feelings, your inspiration, and/or your professional identity?

Can you give me an example of a significant event, moments of student support and/or experiences you had in supporting students in courses that use hybrid learning environments? Why was this significant?

E. Interactions with the environment

Can you talk about the ways in which you interacted within hybrid learning environments to provide support to students or lecturers?

Did you plan any special features, or do you use strategies to promote student interactions? Describe a student's average visit to the learning environment? What activities or interaction would you expect participants to have within this learning environment?

What is the most useful feature/aspect of the course learning environment? Why do you think this is important?

F. Interactions with other members

How do you collaborate with students/teachers in this environment?

What strategies of this learning environment make this a successful collaboration? How can you tell if they are effective?

How do you think the design of this learning environment affects or influences interactions between people involved in the course?

G. Learning

How does the course's learning environment promote/encourage learning?

How do you think that learning takes place within this learning environment?

What do people learn as a result of their participation with you and within this learning environment?

H. Background

Please respond to any of the following...

Which decade were you born in?

What is your occupation? Length of time working in HE? Length of time in this role?

What is your highest qualification?

Level 1 - 4 Certificate

Level 5 Diploma

Level 6 Diploma

Bachelor's Degree or Level 7 qualification

Bachelor Honours Degree or Postgraduate Certificate/Diploma

Master's Degree

PhD

other...

Gender Identity:

Female

Male

Gender diverse

Choose not to answer

Which ethnic group do you belong to? _____

I. Poroporoaki

Productive Hybrid Learning Environments

Focus Group / Interview Protocol – Students

This is a semi-structured interview protocol designed to examine students' perceptions of their interactions and learning processes within the environment and of the course in general. The hui process will provide a kaupapa for the interview. The types of questions I intend to ask include:

A. Mihi / whakawhanaungatanga / kaupapa

Welcome, connections

Purpose of this interview

B. History with the environment

How did you first come to be involved in this course?

What motivated you to become involved in this course?

How long have you been involved in this course?

What were your expectations of your involvement?

C. Perceptions of the environment

How would you describe the learning environment of this course to someone who has never heard of it?

What would be the most important information a new student should know about the learning environment of this course?

What should one do (or be prepared to do) before entering the learning environment of this course?

Can you tell me three words that define the environment?

D. Value of the environment

What makes this learning environment special? Why is this learning environment meaningful?

How does the learning environment affect your professional experience, your skills, your feelings, your inspiration, and/or your professional identity?

Can you give me an example of a significant event, moments of participation, and/or experiences you had within this course's learning environment? Why was this significant?

E. Interactions with the environment

How often do you log in to visit the [REDACTED] site?

During an average week, how many hours would you spend in the learning environment? (Face-to-face compared to Digital spaces)

What is the first thing you do once you log in/visit?

Describe an average visit to the course meeting spaces (Classroom & [REDACTED] site). What activities or interactions would you do or have within the course learning environment in an average visit?

What is the most useful feature/aspect of the course learning environment? Why do you think this is important?

F. Interactions with other members

Do you collaborate with other students? What strategies do you use to make this a successful collaboration? Are these strategies similar to those you use outside the course's learning environment – if not, how do they differ?

How do you think your participation in the course's learning environment affects or influences other students?

Do you feel you know any other students well? What influences this?

G. Learning

How does the course's learning environment promote/encourage learning?

What have you learned as a result of your participation within the course's learning environment?

How do you think learning takes place within this environment?

H. Background

Please respond to any of the following...

Which decade were you born in? (range)

What is your occupation?

What is your highest qualification?

Level 1 -4 Certificate

Level 5 Diploma

Level 6 Diploma

Bachelor's Degree or Level 7 qualification

Bachelor Honours Degree or Postgraduate Certificate/Diploma

Master's Degree

PhD

other...

Gender Identity:

Female

Male

Gender diverse

Choose not to answer

Which ethnic group do you belong to? _____

I. Poroporoaki

Appendix 6 Final Themes

Case Study Themes
<p><u>Case Study 1 - Nursing</u></p> <p><u>Teachers:</u></p> <ul style="list-style-type: none">Supporting and challenging studentsDesigning for teamwork and maintaining continuityBringing research into authentic learning spacesStudent activity and indicators of learning <p><u>Students:</u></p> <ul style="list-style-type: none">Becoming aware of extended boundaries in learningStudents value agency and autonomyPurposeful structure and curated contentDisrupted connections with peers and lecturersRich, realistic teaching and learningChallenged and equipped
<p><u>Case Study 2 - Pharmacology</u></p> <p><u>Teachers:</u></p> <ul style="list-style-type: none">Transformations in course designSupporting and challenging studentsMaintaining design continuityImprovisational theatreStudent activity and indicators of learning <p><u>Students:</u></p> <ul style="list-style-type: none">Becoming aware of extended boundaries in learningStudents valuing agency and autonomyPurposeful structure and curated content Student-lecturer interactions“Making it light-hearted”- ConvivialityRich, realistic teaching and learningChallenged and equipped

Case Study Themes

Case Study 3 – Social Work

Published in Book Chapter:

Aotearoa New Zealand Context – Tangata whenua and Tangata Tiriti

Enacting a te ao Māori worldview

Whanaungatanga

Aotearoa identities, racism, privilege and historical trauma

Decolonisation – Mana-enhancing practice

Te ao Māori worldview – Pā harakeke framework

Appendix 7 NOR 20-61 Ethics Approval

From: humanethics@massey.ac.nz
Sent: Tuesday, 2 February 2021 8:18 am
To: Jenny.Green.7@uni.massey.ac.nz
Cc: Human Ethics; Carvalho, Lucila; Sheridan, Nicolette
Subject: Human Ethics Application NOR 20/61 Approved

HoU Review Group

Reviewer Group

Dr Lucila De Carvalho
Prof Nicolette Sheridan
Researcher: Jenny Green

Title: Productive hybrid learning environments: A multiple-case study in higher education health contexts

Dear Jennifer

Thank you for the above application that was considered by the Massey University Human Ethics Committee: Human Ethics Northern Committee at their meeting held on 02/02/2021.

On behalf of the Committee, I am pleased to advise you that the ethics of your application are approved.

Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

If you wish to print an official copy of this letter. Please logon to RIMS (<http://rims.massey.ac.nz>), and under the Reporting section, View Reports you will find a link to run the Ethics Committee Report.

Yours sincerely
Professor Craig Johnson

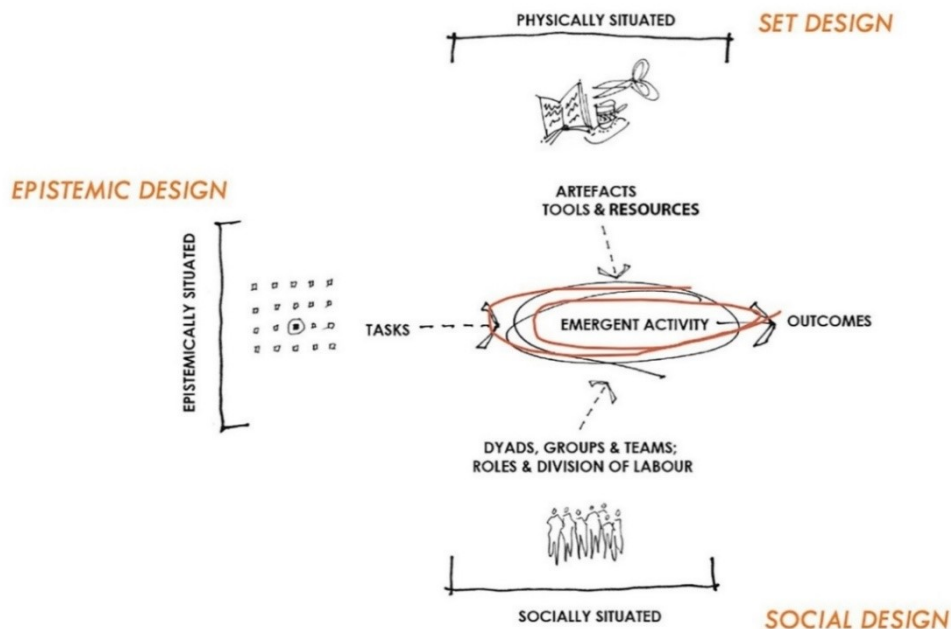
Chair, Human Ethics Chairs' Committee and Director (Research Ethics)

Appendix 8 Field Notes - Observation Protocols

CS1 Nursing

Aspects to be observed will be considered using the ACAD framework.

Figure 1. ACAD Framework



(Adapted from Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (p. 59). Routledge. <https://doi.org/10.4324/9780203591093>)

- *Set design*: The design of elements in hybrid learning space (both online and face-to-face) – including digital and material tools, resources and artefacts, the furniture or learning items used, how items are positioned in space;
- *Epistemic design*: The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources for meaning-making;
- *Social design*: The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration – in the group space or in assessment, the role of the learner as a recipient, participant or as creators of knowledge.

Co-creation and co-configuration activity at learn time: Co-creation of knowledge that emerges within a learning experience and activity, the agency of learners.

Learning Design Template (Tim Fawns)	(27/04/22) Researcher observation notes in black, Researcher comments in blue. P9 comments; P10 comments								
Session 2:	Management of the post-operative trauma patient – SimLab								
Description	<p>Scenario-based simulation using a hi-fidelity manikin, that demonstrates post-surgical, patient deterioration over a series of five phases. Nine students work in pairs, with one pair focusing on each of the phases. Students have just completed six-weeks of clinical learning experiences, some of which may have provided experience in assessment and management of patient deterioration. Some students may not have previously been involved in a similar patient situation. The quad – <i>I think that there is information about what this is in the workbook.</i></p> <p>P9- ? What's the quad?</p> <p>The quad refers to a diagram in Dreifeurst's workbook (p. 269, Fig. 1 Challenging taken-for-granted assumptions.)</p> <table border="1" data-bbox="1003 887 1700 1070"> <tr> <td>Right thinking</td> <td>Right thinking</td> </tr> <tr> <td>Wrong action</td> <td>Right action</td> </tr> <tr> <td>Wrong thinking</td> <td>Wrong thinking</td> </tr> <tr> <td>Wrong action</td> <td>Right action</td> </tr> </table> <p><i>As teachers were novice facilitators in this type of scenario, with a PD session for staff prior to the simulations, they appear unaware of this diagram explaining potential assumptions within simulations.</i></p>	Right thinking	Right thinking	Wrong action	Right action	Wrong thinking	Wrong thinking	Wrong action	Right action
Right thinking	Right thinking								
Wrong action	Right action								
Wrong thinking	Wrong thinking								
Wrong action	Right action								
Task design / instructions:	<p>The scenario is focused on management of a chest drain for a patient who has L) fractured ribs, L) haemopneumothorax, and a surgically repaired, internal fixation of fractured L) femur.</p> <p>Rose's scenario (the patient) is introduced to the group</p> <p>The facilitator leads the group through each of the phases and presents the changes that occur between these.</p> <p>Student actors record key patient, scenario details as provided by the facilitator as a handover at the beginning and between each of the phases.</p>								

<p>Set design</p>	<p>Simulation space with hi-fidelity manikin on a ward bed, set up resembles a post-operative ward, bed space. Available equipment includes, commonly used documentation charts, Vital signs equipment (blood pressure cuff and sphygmomanometer, thermometer, stethoscope), Electronic monitoring showing oxygen saturation in each of the phases. Chest drain and drainage bottle, IV therapy, Dressings on wounds, Use of a large (3m x 1.5m) whiteboard, various coloured markers to identify specific aspects. (See Figure 5.4 white board image)</p>
<p>Social design</p>	<p>Initial whole group briefing (9 students, 2 facilitation staff, 1 manikin “Rose”) Students work in pairs for a phase of this scenario. The whole group debriefs the experience using the DML simulation debriefing tool from Dreifuerst’s Debriefing for Meaningful Learning article. Dreifuerst, K. T. (2012). Using debriefing for meaningful learning to foster development of clinical reasoning in simulation. <i>Journal of Nursing Education</i>, 51(6), 326-333. https://doi.org/10.3928/01484834-20120409-02. Dreifuerst, K. T. (2015). Getting started with debriefing for meaningful learning. <i>Clinical Simulation in Nursing</i>, 11(5), 268-275. https://doi.org/10.1016/j.ecns.2015.01.005</p>
<p>Timing</p> <ul style="list-style-type: none"> ● When will it run? ● How many hours each student’s time this should take up ● How will they pace their engagement? 	<p>This two-hour sim lab occurs the day after two online teaching sessions focused on Shock and trauma. The simulation time is divided up into 10-minute briefing; 30–60-minute progression through five-phases; 45 minute structured debrief. <i>Please review my timings. I note on your scenario 10-30-45 minute sections but wondered if the phases had taken longer than this.</i> P9 I ignored the lesson plan timings- aimed for 45min scenario leaving us a solid hour to debrief</p>

Learning before / during / after	
Learning before:	<p>Class teaching session the day before (Zoom) presents the deteriorating patient, LMS provides a self-directed workbook, links to video case study, textbook, articles, and consideration of application of knowledge to clinical learning experience experiences and settings. This appears to prime the learners for the simulation lab scenario. P9- is this the quad??</p> <p>Timing of this simulation session was disrupted due to COVID-19 requirements occurring during clinical learning experiences. P9 "They came in 'dry' really."</p>
Learning during:	<p>The day after the Zoom teaching session, students come into the simulation suite and are guided through the five phases of this patient scenario by the facilitator's handover; by asking questions of the patient – responded to by the facilitator posing as "Rose"; Students discuss with their partner their assessment, recorded observations, and actions.</p> <p>Some students work synchronously with one focusing on some aspects and the other on different ones, e.g. one student undertakes all the recordings while the other, completes the documentation and feeds back to their peer.</p> <p>The facilitator may jump in with a hint, when required...E.g., ...</p> <p><i>P9, do you recall what you might have said, if the pair needed prompting?</i></p> <p><i>P10 "What is your EWS score? Happy with that? Anything you need to do?"</i></p> <p>P9 Talk them through the ABC, trying to reorientate them to what they they've done well and where to go next, or to direct them. "Ok, so what are you looking for with the Chest drain?" "What do you want to do?" "Do you want to call someone?" "Where are you up to?" "Ok, what are you thinking?"</p>

Learning after:	<p>The students met as a whole group and worked through the DML worksheet to guide the simulation debrief. The facilitator used a large whiteboard to collate feedback from the group regarding: the issue; why it is an issue and related risks this presents for the patient; consideration of how this might affect other body systems; appropriate nursing interventions. The use of specific-coloured pens helped to delineate between these key aspects. E.g., Black pen used for Key problems/issues that the patient presented with, Red pen was used to identify risks, Green pen was used to identify nursing interventions for each problem/issue and ongoing assessments to track improvement or further deterioration.</p> <p>For each issue identified by the students, the facilitator leads them through a series of clinical reasoning cycles as they considered pertinent information to guide nursing care.</p> <p>P9 we put it all back together in the ABCD order to help them restructure their approach to a deteriorating pt in future. "I love the mind-mapping of this, and we could have gone that way, or that way or that way!"</p>
Intended outcomes:	<p>At the end of this simulation, the learners / participants will have:</p> <ul style="list-style-type: none"> • Prepared a patient for ongoing postoperative recovery • Recognised and responded to changes in a patient's condition • Communicated effectively with the client, family and the interdisciplinary team.
Rationale	P9, P10, please add your thoughts and include your initials at the end of any statement.
Rationale physical:	Collaboration with healthcare team members is essential for effective patient care. This scenario and the five, sequential phases that include deterioration of the patient's condition provide multiple opportunities for the learners to identify issues, assess, document, monitor and escalate care when appropriate.
Rationale social:	<p>Rarely does a nurse work in isolation in a post-operative, patient care situation. This simulation requires the learners to work collaboratively in a pair with the patient as a key member of the healthcare team as they contribute to the unfolding scenario.</p> <p>P10 And dealing with socialised medical hierarchies within the acute setting that might be played out under stress (i.e. hospital over capacity) – i.e. keeping it real</p>

Rationale outcomes:	<p>The debriefing session supports reflective thinking on actions and outcomes that occurred during the simulation. It creates an opportunity for the group of learners to clarify key patient issues; identify taken-for-granted assumptions, which may, or may not be accurate; and apply a Socratic questioning technique to support learners to identify correct thinking and actions within a patient care scenario. The whole exercise is designed to foster an iterative process of reflective thinking and clinical reasoning.</p> <p>P9 we put it all back together in the ABCD order to help them restructure their approach to a deteriorating pt in future</p>
Evaluation	
	<p>At the conclusion of the simulation and the debriefing each group has developed a summary overview on the whiteboard, and in their handout, of key patient problems, risks, effect on other body systems and ideal nursing actions. The facilitators have guided the learners through a reflective process that elicits incorrect thinking that can be challenged, discussed and the group has identified priority patient-focused, nursing interventions to assess, recognise, manage and ameliorate patient deterioration for the person in the scenario and across to a range of varying patient circumstances.</p> <p>P9 This was the only face-to-face session in the whole semester due to COVID-19 disruptions. We picked something broad to capture cohesive content</p>

(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

Focusing Questions when 'ZOOMING IN'		Observations
Doings and sayings:	<p>What are people doing and saying?</p> <p>What are they trying to do when they speak and act?</p>	<p>Within the simulation lab, the facilitator provides instructions for how the session will proceed and sequentially gives patient scenario details for five phases of patient deterioration.</p> <p>The facilitator gives patient details and information at the beginning of the simulation that resembles a typical change-of-shift, nursing handover.</p> <p>The students are noting patient and scenario details into their DML worksheets.</p> <p>The simulation technician (supporting teacher) uses a remote digital tablet device to edit the manikin's vital signs status to reflect deterioration across the five phases of the scenario.</p> <p>In each phase, a pair of learners engage with 'Rose' the manikin patient, undertake nursing assessments and actions and record these details in clinical, patient-assessment documents. The facilitator voices Rose's responses to learner questions during each phase. The simulation technician edits the patient parameters to show a gradual deterioration in status and wellbeing.</p> <p>Phase 1: Learner pair engages with Rose, assess and document their observations.</p> <p>Phase 2: Learner pair engages with Rose, assess and document their observations.</p> <p>Phase 3: Learner pair note the patient's leg wound dressing is "intact with no break-through oozing", they identify the chest drain issue of "swinging with no bubbles". There are whispers, but no audible conversation, between the pair regarding the patient. They are prompted by the facilitator to "phone a friend" and tap into the knowledge of the rest of the group who are sitting and observing. The result is that the documented recordings indicate an Early Warning Score of 7 and the House Officer is contacted.</p> <p>Phase 4: The learner pair ask questions of Rose to increase their understanding of her current condition. One of the pair picks the stethoscope up from the equipment available and listens to Rose's thorax. Their assessment and discussion with each other indicate that Rose's condition is deteriorating.</p>

		<p>The learner documenting the findings says that the EWS is 9 which indicates the need to contact the registrar doctor. They use the available 'air-phone' to contact the registrar and using a communication tool (ISOBARR) that is available in the resource documents, they give a detailed handover of Rose, and her current deteriorating status and the pertinent clinical details.</p> <p>Phase 5: ARRGH! I got consumed in the sim and didn't note down what they did or said. Are you able to add in the types of things the pairs were doing or saying in this phase please?</p> <p>P9 most groups were flapping in this stage. Questions about O2 application if they hadn't already decided to up it. I threw lifelines to most groups after they had done the set of Obs- "what are you going to do while you wait for the Reg to turn up? Can you push the emergency bell?" that kind of thing. Most students haven't actually thought about interventions they can do or how long is too long to wait for the doc that is 'on their way</p>
Interactional order:	How are participants' positions (with respect to each other) negotiated and resisted?	<p>The pairs move between Rose - the patient, and the table with the charts on it. The rest of the sim lab group (10 people) are seated around the edge of the simulation space.</p> <p>A general invitation is given by the facilitator for a pair to nominate themselves for each phase.</p>
Timing and tempo:	How do their doings and sayings flow in time? How do they coincide and form sequences? What rhythms do they form?	<p>In each phase there is discussion between each pair. The initial pairings discuss fairly quietly and at time sporadically. As the simulation develops, and learners become aware of the expectations there is increased fluidity in their actions and reactions to patient assessment and deterioration. The student who had previously been in an ICU clinical learning experience moved into the flow of patient assessment in line with what they had experienced (this was communicated to the researcher in a later focus group interview).</p> <p>Are there any other rhythms you are aware of? P9 nah they either do what they were role modelled in a really similiar situation</p>

Bodily choreography:	What sorts of things are made present through bodies and how are bodies configured by the practice?	The simulation manikin 'Rose' becomes the centre of attention, the pairs move around the bedspace, navigating between patient assessment and documentation of findings in the patient charts provided. Any other comments?...
Tools and artefacts:	What tools and artefacts are used? What effects do they have? How does their presence shape what is done and not done?	The initial pair use the patient charts, BP cuff, Thermometer, Check Patient-controlled analgesia (PCA) pain relief and provide education on how to use this. There is an initial focus on documents and documentation of findings with minimal recognition of patient deterioration. Subsequent pairs benefit from seeing the previous pairs' nursing care and build on this by including more focused assessment and consideration of the patient's deteriorating state. A latter group use the ISOBARR communication handover tool (laminated sheet) to organise their patient information to escalate patient care with a doctor. P9
Practical concerns:	What do the practitioners care about? What do they see as the main object of the activity?	What are your thoughts on this? What is important to you in the simulation and in the developing phases of deterioration?... P9- i want to see head to toe assessments for a baseline. I know we teach them this is 165 and I know they are conditioned out of it in clinical because the role modelling isn't there. This shouldn't be the case. I want them to see how their assessment skills can save their (the pts) bacon and can add to better articulation of their (or a better picture for differentials) problems when escalating care. Earlier assessment = early intervention. If it is going pear shaped → tag different students in and out quietly without being obvious, not removed from the scenario, rearranged and brought them back in later.

<p>Normativity and creativity:</p>	<p>How do practitioners justify what they do?</p> <p>What regime of accountability or principles applies?</p> <p>How are breakdowns resolved, and new variants of practice generated and agreed upon?</p>	<p>Your thoughts and comments?... P9 I'm tired, cant decipher the question lol.</p> <p>We pick something realistic, 2 or 3 patients merged into a tidy scenario – focus on the key issue e.g. chest drain, making sure that students are familiar with chest assessment, heat-to-toe assessment, identification and escalation of the deteriorating patient.</p> <p>We run through the scenario and plot EWS so we don't inadvertently lead them down the wrong path or throw red herrings at them. We genuinely want them to be successful in the scenario- its not about the students killing the manikin each time- in fact i stopped short at that each time- what's the learning in that failing.</p>
<p>365</p> <p>Stabilisation:</p>	<p>How are novices socialised?</p> <p>Do participants identify with a community of practice?</p> <p>What doings, sayings, and artefacts are used to make practices durable and able to travel between sites?</p>	<p>The use of the DML worksheet can provide consistency of debriefing across multiple campus sites.</p> <p>Many students will have witnessed patient deterioration and MET call responses in their clinical learning experience settings. This simulation draws on these prior experiences and on knowledge that has been covered in class teaching sessions and in their workbooks. Any other comments or corrections?</p> <p>P9 362 is structured ABCD, we give a lot of theory to deterioration, deteriorating pt lecture immediately prior and the students know they're doing a deteriorating pt scenario but hardly any of them have a game plan. If they can walk out with a game plan approach to a real deteriorating pt then objective met from my point of view.</p> <p>They have had 265 to be intro'd to the manikin and what its capable of. Ayla and I ran exactly the same scenario and documentation across campuses- the variables are teacher approach and then students.</p>

(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

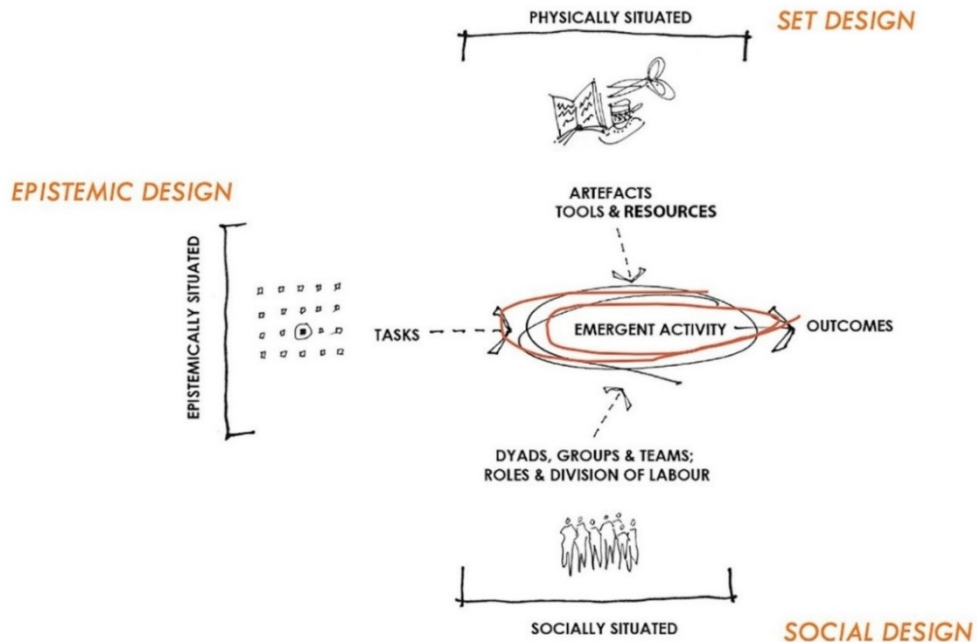
Focusing Questions when 'ZOOMING OUT'	Observations
<p>What connects the 'here and now' of the practice to the 'there and then' of other practices?</p> <p>How are bundles of practices ("chains and assemblances of situated practices" Nicolini, 2012, p. 232) kept together?</p> <p><i>Interest is on the types of opportunities for action in emergent activity that social, set, and epistemic might lead to (my take on what was written).</i></p>	<p>The final debriefing session using a whiteboard to map out the various problems that this patient is experiencing, draws the threads together of previous learning in bioscience, pathophysiology, pharmacology, knowledge of long-term conditions and acute exacerbations. This process reminds the students of knowledge that they have or may need to revise and links them back to focusing on the ABCDE of emergency management: Airway, Breathing, Circulation, Disability, Exposure/Escalation.</p> <p>Please add your thoughts, comments, and any details missing?</p> <p>P9 I try to keep it safe. I know especially with those third years, you don't pair up an introvert and an extrovert. Or, have a super dominant pair after a quiet pairing. So that the students feel okay within the simulation. "You've done well! Where do you want to go next?" I'm aware of not wanting to take over.</p>
<p>366</p> <p>How does the practice reproduce existing arrangements in the organisation and more broadly?</p> <p>How does it contribute to change?</p>	<p>This simulation mimics the reality of patient deterioration and can provide a schema for nursing assessment and action that learners can apply in similar, future situations.</p> <p>Contribution to change.</p> <p>Please add your thoughts, comments, and any details missing?</p> <p>P9 contribute to change recognising as an individual practitioner that picking up a stethoscope is good.</p>
<p>How did the practice come to be as it is now?</p>	<p>An expert in the nursing department has been successfully using the DML worksheet with simulations and learners. There has been a deliberate effort to support staff, unfamiliar with this debriefing process, to develop their understanding and skills in facilitation of simulation debriefs.</p> <p>Please add your thoughts, comments, and any details missing?</p> <p>P9 – Names P10] and I are looking at integrating Kerry Reid-Serle's tag team elements into simulations to give them better structure and less faff.</p>

<p>When to stop ZOOMING OUT: when you can provide -</p> <ol style="list-style-type: none"> 1. A convincing explanation of why the practice is as it is, and not otherwise. 2. An account of how the local practice has non-local effects. <p>What counts as convincing depends upon the audience and its concerns: theorising is also a situated practice. (p. 1053)</p>	<p>Why do you believe the practice is as it is?</p> <p>P9- habits? Novices fumbling around doing their best? Not sure i understand the question.</p> <p>What non-local effects do you see that go beyond this course context?</p> <p>P9 contribute to practice change recognising as an individual practitioner that picking up a stethoscope is good.</p>
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CS2 Pharmacology

Aspects to be observed will be considered using the ACAD framework.

Figure 1. ACAD Framework



(Adapted from Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (pp. 48-70). Routledge. <https://doi.org/10.4324/9780203591093>)

- *Set design*: The design of elements in hybrid learning space (both online and face-to-face) – including digital and material tools, resources and artefacts, the furniture or learning items used, how items are positioned in space;
- *Epistemic design*: The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources for meaning-making;
- *Social design*: The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration – in the group space or in assessment, the role of the learner as a recipient, participant or as creators of knowledge.

Co-creation and co-configuration activity at learn time: Co-creation of knowledge that emerges within a learning experience and activity, the agency of learners.

Learning Design Template (Tim Fawns)	07/09/21
Session 1:	SSEN Zoom Tutorial (Session 3 – Modules 5-6) (Recording: 214.202 Online Session 3 (xxxxx.ac.nz))
Description	Tutorial (57 mins)
Task design / instructions:	Expectation that students are likely to have completed the modules already, but if they haven't, L2 does a 10 min review of key foundation points before moving on to questions students might have.
Set design	PowerPoint slides that link to module content – Video presentations and H5Ps.
Social design	30 students in the Zoom room; off campus, some at home or other locations, joining via a Zoom link.
Timing <ul style="list-style-type: none"> • When will it run? • How many hours each student's time this should take up • How will they pace their engagement? 	<p>During this time the campuses are experiencing rolling Covid-19 lockdowns and clinical learning experiences are occurring at different times across the campuses and within campuses depending on lockdown restrictions.</p> <p>All modules are open and available for completion at a time that suits the individual student.</p> <p>Pacing is guided by a Study Schedule that outlines ideal timings for completions.</p> <p>This tutorial is scheduled to occur at the end of a series of modules, in a catch-up week break before the next modules start.</p>
Learning before / during / after	
Learning before:	<p>Module 5: Drugs and the autonomic nervous system: Study guide, presentations, review questions at the end of the presentation; Weekly activity; Work on relevant part of the assignment.</p> <p>Module 6: Drugs and the respiratory system: Study guide, presentations, review questions at the end of the presentation; Weekly activity; Work on relevant part of the assignment.</p>

Learning during:	<p>Purpose is to review content expected to be completed before the end of the mid-semester break and to answer any final assignment questions. Acknowledgement that some students will not yet have completed modules <i>[there are rolling clinical learning experiences occurring on one campus]</i>.</p> <p>Content groups medications into memorable visuals, examples, and stories.</p> <p>Student input and responses are regularly sought.</p> <p><u>Review of Module 5: Parasympathetic nervous system of Sympathetic nervous system.</u></p> <p>Reminders of content learnt in Year 1; links made to potential clinical presentations.</p> <p><u>Review of Module 6: Respiratory drugs</u></p> <p>Mindmap showing the main types of medications, those regularly used, and others that may be used for specific purposes/situations.</p> <p>We also, usually talk about the New Zealand formulary and trying to link them to that clinical kind of resource. So, trying to just get them to think about that and apply it so that it doesn't become just a theory course, but that hopefully they're going to be able to make links. (P4)</p>	
370	Learning after:	<p>Use learning so far to work on and complete assignment due at the end of this week.</p> <p>Use tutorial content to support beginning modules yet to be completed.</p>
Intended outcomes:	<p>To provide another way to look at and consider the course content that brings a variety of aspects together into a succinct whole – both visually in the slides and mindmaps and also in the discussion, explanations and linked examples/stories.</p>	
Rationale		
Rationale physical:	<p>Course has been designed in an asynchronous, modular format to accommodate unpredictable lockdown disruptions to clinical learning experience and attendance on campus.</p> <p>Observed tutorial occurs on Zoom to allow synchronous attendance for those able to attend and recorded for those unable to attend and also for later review by any course participant.</p>	

Rationale social:	<p>Interactions with students maintained positive affirmation, included humour, acknowledged great questions and comments from students.</p> <p>Lecturers gave time after asking questions for the student responses to show in the chat or on audio – not rushed.</p> <p>At no time, were negative comments made about cameras being off, or lack of/delay in responses.</p> <p>Lecturers kept light-hearted rapport with each other and with students.</p>
Rationale outcomes:	To present dense material in an easy-to-understand, visual and story-related way.
Evaluation	
371	<p>This one-hour tutorial brought together detailed course content and repackaged it in an informative, visual and memorable way. Students were invited to, and did, contribute to the learning throughout both in text, audio and video image formats.</p> <p>Summary resources (mindmaps, summarising slides) were provided to supplement content available in the course resources and for the purpose of review for later assessment.</p>

(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

Focusing Questions when 'ZOOMING IN'		Observations
Doings and sayings:	<p>What are people doing and saying?</p> <p>What are they trying to do when they speak and act?</p>	<p>Lecturers 1 (P3) & 2 (P4) dual presenting, taking separate topics.</p> <p>Someone with mic on, another student identifies who it is, and L2 asks them to please mute, smiling and humoured "unless you want to say something, then please say so".</p> <p>Reminds participants to please use the chat to ask questions, or turn mics on to ask questions, but otherwise remain on mute.</p> <p>A participant reminds presenters that the Zoom host can mute people. L2 ask L1 to monitor this.</p> <p>2 students in same location have camera on, all others no camera.</p> <p>L2 "Sorry my chicken is making a racket outside, it's really hard to concentrate" <i>laughter and smiles from visible students and L1.</i></p> <p>You know, we didn't say anything about no one having their cameras on I don't think. And that was like I that was an intention of mine. Like, I wasn't going to admonish anyone for not engaging in the way that we wanted them to. Like I probably got off after and thought, you know, none of them had their cameras on. But for them? I wanted them to know that, hey, I'm happy for you to be here and I'm happy to be here and my chickens are squawking in the background, but we're all happy to be here. (P4)</p>
Interactional order:	How are participants' positions (with respect to each other) negotiated and resisted?	<p>L1 introduces the session and hands over to L2.</p> <p>L2 anticipated L1 would show the slides → live, professional handling of situation with L2 finding the slides and making a self-deprecating humorous comment.</p>
Timing and tempo:	How do their doings and sayings flow in time? How do they coincide and form sequences? What rhythms do they form?	L2 pauses after sections of content to check how it's going for students – text responses, visual thumbs up on camera, L2 celebrates this "Yay!" and acknowledges student feedback by incorporating their response and their name into the narrative.

Bodily choreography:	What sorts of things are made present through bodies and how are bodies configured by the practice?	L2 presenting from home with background blurred; L1 presenting with white wall behind. L2 is using hands to describe, tone of voice, humour to complement their presentation.
Tools and artefacts:	<p>What tools and artefacts are used?</p> <p>What effects do they have?</p> <p>How does their presence shape what is done and not done?</p>	<p>Graphic images, mindmaps, reference to previous courses and other modules in this course.</p> <p>L2 talks to the images and explains it in relation to body nerve pathways and responses, then links these to medications that can either stimulate or inhibit these pathways.</p> <p>Effects are: student questions, student embellishments on content, student and lecturer recounting of examples and stories.</p> <p>The presence of these tools serves as a visual and memory aide for dense, important, body system responses, combined with medication uses and actions content.</p> <p>For instance, asthma, you can actually go in and see step by step what the management is and where the different inhalers fit into the process. With the online sessions and some of the presentations, but also more in the assessments we tried to integrate this. So, that actually they have to go and look at the New Zealand formulary list, look what the interaction might be, and maybe go to the Medsafe data sheet for their main source of information, rather than Googles' drugs of the world. (P3)</p>
Practical concerns:	<p>What do the practitioners care about?</p> <p>What do they see as the main object of the activity?</p>	<p>Relating the topic to known concepts, lived experiences of "Fight or flight" and "Rest and digest". Checking student understanding.</p> <p>Supporting students to understand the systems and then apply knowledge of medication actions on these systems – either mimicking or inhibiting.</p>

		It's more that you need to know where to go and find the information, be able to interpret it. And hence the New Zealand Formulary. (P3)
Normativity and creativity:	<p>How do practitioners justify what they do? What regime of accountability or principles applies? How are breakdowns resolved and new variants of practice generated and agreed upon?</p>	<p>Acknowledges that the topic is challenging, key is the slide (Tutorial 1) shown at the outset that identifies the differences between these two nervous system pathways and effects.</p> <p>L2 unexpectedly needs to share slides and does this seamlessly.</p> <p>L2 computer battery low, able to connect to power with minimal disruption to flow of tutorial and is an example of what many are currently experiencing as a result of Covid-19 lockdowns and increased use of technology.</p> <p>L2 has included pictures because they acknowledge they can't remember a list of drugs but need pictures to help them – normalising use of the resource and acknowledging potential student challenges.</p> <p>Our intention of trying to just do the best we could at that time grappling with technology, trying to look human, that something's didn't work out. We're like, well, you know, we're all. We're all just doing our best here. But on the other hand, trying to at least appear professional. My intention going in was I know this is not going to be perfect, just like any lecture. That's a rookie mistake. Come on, P4. Why? Why isn't it plugged in? Inside I would have been sweating. (P4)</p>
Stabilisation:	<p>How are novices socialised? Do participants identify with a community of practice?</p> <p>What doings, sayings, and artefacts are used to make practices durable and able to travel between sites?</p>	<p>Gentle reminder about mics, muting, questions in chat or live.</p> <p>Lecturers regularly invite students to contributions to the content discussions and ask questions. The student and lecturer responses indicate a learning community without explicitly naming this.</p> <p>Images, mindmaps to explain content and for students to use as revision material.</p> <p>Tutorial recorded for those unable to attend and for later review by any student in preparation for assessments.</p>

		<p><u>In the study guide - 'Helpful Hints in Studying Pharmacology'</u> <i>Be an active learner – take notes as you work your way through the modules. Research shows that students who take notes remember information better. The act of translating new information into words or pictures helps form new pathways in the brain, making it easier for our brain to store and retrieve the information. You do not get the same benefits with passive learning, where you just listen to or read information.</i> (P3)</p> <p>We introduce them in the second online session, we actually take them through how to use the New Zealand formulary and what information is available and then for their assignment there is a question that they have to actually go and find, which is the funded drug or whatever. Just sounds odd but at least they need to go to the right area. What cautionary advisory labels are associated with that drug? (P3)</p>
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(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

Focusing Questions when 'ZOOMING OUT'	Observations
<p>What connects the 'here and now' of the practice to the 'there and then' of other practices?</p> <p>How are bundles of practices ("chains and assemblances of situated practices" Nicolini, 2012, p. 232) kept together?</p> <p><i>Interest is on the types of opportunities for action in emergent activity that social, set, and epistemic might lead to (my take on what was written).</i></p>	<p>L2 makes links between content discussed and clinical presentations, refers back to year 1 course content to provide context, and links forward to other topic modules and upcoming assessments.</p> <p>Discussion and visuals bring together already learned content in a cohesive and memorable format for students to use if they find them helpful.</p> <p>Students are regularly invited to respond to questions or to ask questions. There is regular student input to the content details and these are acknowledged by lecturers and built on in emergent activities to develop and enhance knowledge.</p> <p><i>So, we're only looking at New Zealand drugs. We're looking more at the ones for different conditions and what the common ones are to treat those or help manage those conditions. Hopefully when they go out onto placement and things they can then then use it to find information in the future and things. (P3)</i></p>
<p>How does the practice reproduce existing arrangements in the organisation and more broadly?</p> <p>How does it contribute to change?</p>	<p>This tutorial brings together students from the entire cohort, into a zoom session. In previous years this might have occurred on individual campuses with campus cohorts. The purposeful, reformatting of this course into a modular, hybrid format now accommodates student attendance either synchronously or later in asynchronous observation of the recording.</p> <p>Hybrid format provides a stable format that supports student engagement irrespective of regional lockdowns or clinical learning experience requirements.</p>
<p>How did the practice come to be as it is now?</p>	<p>Previous year lockdowns... plan to move to modular format. Beginning of 2021 with lockdowns again, solidified plan to move to flexible, modular delivery for semester 2.</p> <p><i>So, I think I have made it more applied, also I include a lot of the questions now. I actually try and get them to think about. "So, someone's going to get constipation. What are we going to do about it?" Where can they find information? Well, they</i></p>

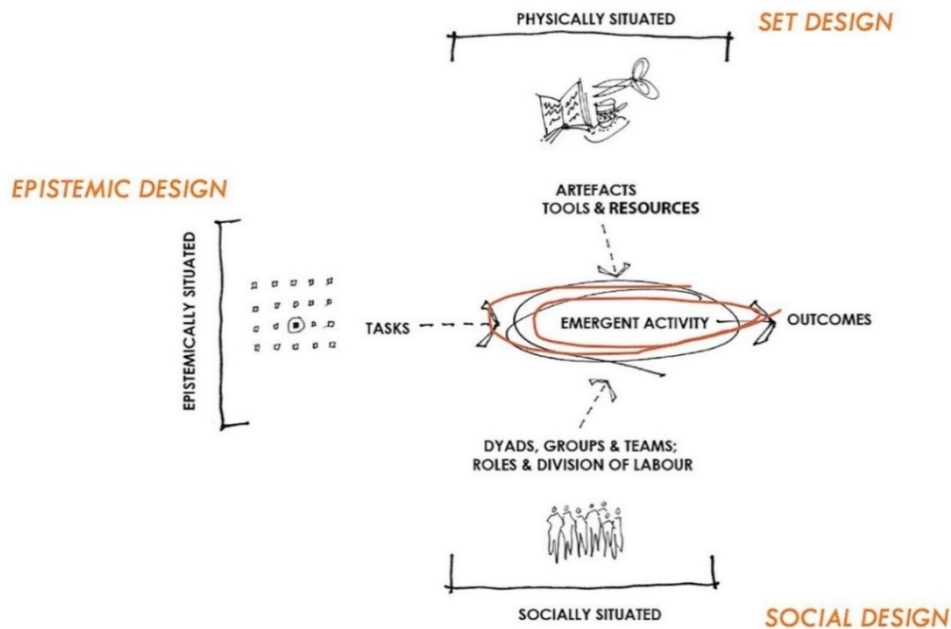
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	<p>can go there. The other resource, which I introduced, which wasn't being used was the best practise articles. Those New Zealand resources, when we first had the assignment, you know we'd be getting different drugs being used that were American drugs and all sorts of things that. (P3)</p>
<p>When to stop ZOOMING OUT: when you can provide -</p> <ol style="list-style-type: none"> 3. A convincing explanation of why the practice is as it is, and not otherwise. 4. An account of how the local practice has non-local effects. <p>What counts as convincing depends upon the audience and its concerns: theorising is also a situated practice. (p. 1053)</p>	<p><i>[Do you think that these responses provide a convincing explanation of what is occurring in the tutorial?]</i></p> <p>I thought it seemed to reflect what, ... obviously you're coming from a slightly different viewpoint than I'm used to, but it made sense. (P3)</p> <p>I read through and the only thing that I thought may have been missing was we also, usually talk about the New Zealand formulary and trying to link them to that clinical kind of resource. (P4)</p>

CS3 Social Work

Aspects to be observed will be considered using the ACAD framework.

Figure 1. ACAD Framework



(Adapted from Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (p. 59). Routledge. <https://doi.org/10.4324/9780203591093>)

- *Set design*: The design of elements in hybrid learning space (both online and face-to-face) – including digital and material tools, resources and artefacts, the furniture or learning items used, how items are positioned in space;
- *Epistemic design*: The design of learning tasks – organisation of knowledge, considerations about ways of knowing, the selection, sequencing and pacing of information, the provision of resources for meaning-making;
- *Social design*: The design of social arrangements for students – including group work, dyads, scripted roles, divisions of labour, the nature of collaboration – in the group space or in assessment, the role of the learner as a recipient, participant or as creators of knowledge.

Co-creation and co-configuration activity at learn time: Co-creation of knowledge that emerges within a learning experience and activity, the agency of learners.

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Learning Design Template (Tim Fawns)	10/04/21
Session 1:	Mihimihi - Intro of ngā kaiako and JG researcher
Description	<p>We met in the wharenuī.</p> <p>The first exercise was to get the students into groups by region so because most students don't know each other.</p> <p>The groups then went outside formed a circle.</p> <p>And using a rhythm with two thigh slaps and two clicks of the hand, And then the person's name with a hand or body gesture.</p> <p>One person does this, and then the second person with a slap on the thigh, clicks of the hands connects their name with an action. Then return to the first person their name and actions, going around the circle each time adding one new person and returning to the beginning.</p> <p>The group was able to go around the entire group, stumbling a few times, but beginning at the first person when that occurred. By the end the participants had said each person's name multiple times along with their chosen name action.</p>
Task design / instructions:	The instructor gave the instructions and demonstrated with two of the kaiako
Set design	Outside the front on the marae ātea grass area
Social design	Groups of 12 to 15
Timing <ul style="list-style-type: none"> • When will it run? • How many hours each student's time this should take up • How will they pace their engagement? 	<p>First activity in noho marae</p> <p>30 mins</p> <p>Guided by kaiako / teacher</p>

Learning before / during / after	
Learning before:	know people are from your region
Learning during:	lots of laughter
Learning after:	Go in your group and work out a skit to show everyone else where you are from Later tonight you will perform your skit and all stand together to give your mihi mihi while supported by everyone from your region.
Intended outcomes:	
Rationale	P1 responses and perspectives in blue; Researcher perspectives in black.
Rationale physical:	Students are moving around, they are interacting, they are concentrating on each other.
Rationale social:	Students are getting to know each other's name and being able to remember via repetition but also by rhythm
Rationale outcomes:	Relaxing the students with each other, creating laughter, fun and getting to know the other peers in their group who they will be working with the duration of their time.
Evaluation	
	By then end of the session, the students know the names of all of the people in their region, which is also, a third of the entire noho marae group's names.

(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

Focusing Questions when 'ZOOMING IN'		Observations
Doings and sayings:	What are people doing and saying? What are they trying to do when they speak and act?	There is much laughter and discussions between people in the circle. They are trying to mimic the person's action for their name and maintain the rhythm of the activity.
Interactional order:	How are participants' positions (with respect to each other) negotiated and resisted?	Random, self-selected space in the circle. Limited opportunity to opt-out of involvement.
Timing and tempo:	How do their doings and sayings flow in time? How do they coincide and form sequences? What rhythms do they form?	The activity creates a constant rhythm that needs to be maintained by individuals going around the circle. Errors mean that the process begins at the first person. While this 'error' has the potential to seem to be a negative, it actually enhances the point of the activity which is repetition to help with remembering people's names. Rhythm of the name chant
Bodily choreography	What sorts of things are made present through bodies and how are bodies configured by the practice?	Bonding, collective, dependence, humour, enjoyment Developing a sense of team, shared experience. (These aspects will be drawn on later in regional skit and team support during mihimihi)
Tools and artefacts:	What tools and artefacts are used? What effects do they have? How does their presence shape what is done and not done?	Voice, body movements, marae ātea space
Practical concerns:	What do the practitioners care about? What do they see as the main object of the activity?	This is hugely important at the start of the noho marae, the students have brought all their bedding in, they have set up their sleeping spaces and now it is to eliminate any further anxiety around not knowing their peers. By doing this exercise outside and in front of the whare shows the students that the marae atea can also be somewhere where whanaungatanga happens, it is relaxing fun and energised to suit the start of the workshops.

<p>Normativity and creativity:</p>	<p>How do practitioners justify what they do?</p> <p>What regime of accountability or principles applies?</p> <p>How are breakdowns resolved and new variants of practice generated and agreed upon?</p>	<p>This was done by checking in with one another and noticing the levels of energy, noticing the group dynamics and moving from one space to another.</p> <p>Working together collectively as a tight teaching group.</p> <p>We used the 'huddle' where are continuously checking in with each other. The schedule for the morning was supposed to be our kaumatua and kuia doing a talk on the whare and the whakapapa however, [<i>names kaumatua</i>] had to attend a meeting so we (the teaching team) huddled and we came up with a plan that involved the kaumatua at a later time, and ensured flow when setting up and starting our workshops.</p>
<p>Stabilisation:</p>	<p>How are novices socialised?</p> <p>Do participants identify with a community of practice?</p> <p>What doings, sayings, and artefacts are used to make practices durable and able to travel between sites?</p>	<p>Examples of practice demonstrated by Kaiako</p> <p>Repetition, explanations</p> <p>Identify with a community of participants from the same region.</p> <p>Multiple repetition meant that the names of people were associated with an action, and this prompted remembering the person's name beyond the activity time and throughout the entire noho marae. Supports potential ongoing interactions of these people within their region on return to home.</p>

(From Goodyear, 2020: Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *BJET*, 51(4), 1045-1060.)

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Focusing Questions when 'ZOOMING OUT'	Observations
<p>What connects the 'here and now' of the practice to the 'there and then' of other practices?</p> <p>How are bundles of practices ("chains and assemblances of situated practices" Nicolini, 2012, p. 232) kept together?</p> <p><i>Interest is on the types of opportunities for action in emergent activity that social, set, and epistemic might lead to (my take on what was written).</i></p>	<p>Makes links between the person's name and their prior involvement in forum discussions.</p> <p>This activity enables ongoing association of a person's name with the action they chose to go with their name. Supports group cohesion, participant membership, and an ongoing sense of support that was drawn on through strong emotive experiences in the remainder of the noho marae time.</p>
<p>How does the practice reproduce existing arrangements in the organisation and more broadly?</p> <p>How does it contribute to change?</p>	<p>It brings together people who may know each other from their class involvement at their campus. However, a significant number of students are studying at distance and may have not met anyone, including people who may live in proximity to them.</p>
<p>How did the practice come to be as it is now?</p>	<p>This is the first noho marae that this teaching team has been in place, therefore there was planning up to the day and the call for huddles.</p>
<p>When to stop ZOOMING OUT: when you can provide -</p> <ol style="list-style-type: none"> 1. A convincing explanation of why the practice is as it is, and not otherwise. 2. An account of how the local practice has non-local effects. <p>What counts as convincing depends upon the audience and its concerns: theorising is also a situated practice. (p. 1053)</p>	<p>Students know the names of all of the people in their region, they are interacting with their group. The beginning of getting to know others in their cohort and developing connections to carry through the rest of the course.</p>

Appendix 9 Multiple Case Study Analyst's Notes

CS1 Nursing

<p><u>Synopsis of case:</u></p> <p>This is a study of a 3rd year nursing course (152 students), geographically spread across three regions. Teachers redesigned the course to mostly online delivery due to COVID-19 restrictions. Observations of on-campus simulation scenario, and interviews with students and academic staff.</p>	<p><u>Case findings:</u></p> <p>I. Set Design successful when: Seamless integration of learning activities and clinical learning experience schedules</p> <p>II. Epistemic Design successful when: Explicit alignment between clinical scenarios and vertically sequenced programme competencies.</p> <p>III. Social Design successful when: Peer mentoring and prompt supervisory feedback are embedded across all hybrid modalities to create a cohesive clinical learning community.</p>
<p><u>Uniqueness of case situation for multicase research:</u></p> <p>Findings indicate broad consensus that authentic patient cases and integrated feedback loops constitute the principal drivers of productivity.</p> <p>Divergence in views on acceptable levels of digital workload and feasibility of sustained supervisory presence.</p>	<p><u>Possible excerpts for cross-case report: (Section...)</u></p> <p>5.5.1 "It's a safe place"</p> <p>5.5.1 "Okay you've done well" Q prompts</p> <p>5.5.2 Learning design integrity, "so worth investing"</p> <p>5.6.2 "more focused" (SP12)</p> <p>5.6.2 Agency "trial and error..." (SP11)</p> <p>5.6.5 "Practice... before real" (SP10)</p>
<p><u>Relevance of case for cross-case themes:</u></p> <p>Theme 1 (Research Question): High relevance</p> <p>Theme 2 (Sub-question 1): High relevance</p> <p>Theme 3 (Sub-question 2): High relevance</p>	<p><u>Situational influences:</u></p> <p>COVID-19 restrictions, rolling lockdowns</p>
<p><u>General influences on PLE:</u></p> <p>Learners need strong emotional safety (mental wellbeing, financial pressure, time constraints) to engage with learning.</p> <p>Simulation safety and effective priming for learning essential yet at risk with novice staff.</p>	

Commentary:

While emergent learning is the goal, it requires deliberate scaffolding, tailored LMS content, strategies to mitigate physical and meta-physical isolation.

Designing clear pathways for applying learning to professional practice remains a critical priority.

The findings suggest productive hybrid clinical learning exists when authentic scenarios, competency-aligned tasks, and structured social support operate synergistically. These three mechanisms translate into practical design features that can be recognised and sustained.

Source: Stake (2006) <https://www.guilford.com/add/forms/stake.pdf>

CS2 Pharmacology

<p><u>Synopsis of case:</u></p> <p>This is a study of a 2nd year pharmacology course, primarily including nursing students (172/175). The course was redesigned in response to historical and educational factors and then rapidly transformed in response to the global COVID-19 pandemic. Observations of course resources, an online tutorial session, and individual interviews and focus groups provided data for analysis.</p>	<p><u>Case findings:</u></p> <p>I. Set Design is successful when: course material is structured and scaffolded to develop knowledge and skills, combined with practice with tools used in professional contexts.</p> <p>II. Epistemic Design is successful when: learning material is purposefully organised into flexibly accessed components, selected according to student preferences and requirements.</p> <p>III. Social Design is successful when: Communication between staff and students is clear, collaborative and empathetic.</p>
<p><u>Uniqueness of case situation for multicase research:</u></p> <p>Findings indicate a consensus for maintaining interactions with teachers and peers which had been moderated by pandemic restrictions.</p> <p>Findings suggest that andragogical and heutagogical design provides freedom for students to create their own learning pathway through course material.</p> <p>Findings indicate that a consistent design approach can create a stable, predictable format with effective strategies for learning.</p> <p>Despite the ubiquitous nature of devices providing the ability to connect remotely, students expressed feeling isolated.</p>	<p><u>Possible excerpts for cross-case report: (Section...)</u></p> <p>6.5.3 Teachers design “Hopefully...” (P12)</p> <p>6.6.1 Flexibility access and resources (SP5)</p> <p>6.6.1 Tech challenges (SP4)</p> <p>6.6.4 “I’d rather [have] over encouragement than no encouragement.”</p>
<p><u>Relevance of case for cross-case themes:</u></p> <p>Theme 1 (Research Question): High relevance</p> <p>Theme 2 (Sub-question 1): High relevance</p> <p>Theme 3 (Sub-question 2): High relevance</p>	

<p><u>General influences on PLE:</u></p> <p>Incorporation of effective learning design strategies to augment hybrid learning experiences.</p> <p>Academic staff willing to redesign their course material</p>	<p><u>Situational influences:</u></p> <p>COVID-19 Rolling lockdowns and challenging clinical learning experience requirements throughout the semester.</p> <p>Institutional & programme wide – scaffolding & LMS layout predictability</p>
<p><u>Commentary:</u></p> <p>When viewed as a whole, the findings suggest that productive, hybrid learning environments can be created through planned and thoughtful curation of content creating a purposeful structure and modular formats that can result in a stable learning environment able to weather societal and global challenges.</p>	

CS3 Social Work

<p><u>Synopsis of case:</u></p> <p>This is a study of a 3rd year social work course (60 students), geographically spread across Aotearoa New Zealand. There are 4-weeks of asynchronous learning followed by an in-person noho marae. Weekly topics are thematically represented by 3 kete (baskets) of knowledge: Ko wai au? Who am I?; Ko wai koe? Who are you?; Reflecting on learning</p> <p>Synchronous noho marae, live in experience observed and reported on in book chapter.</p>	<p><u>Case findings:</u></p> <p>I. Set Design successful when: synchronous activities leverage off asynchronous by incorporating experiential, environmental, spiritual aspects and te ao Māori principles, acknowledging their combined role in planetary and personal wellbeing.</p> <p>II. Epistemic Design successful when: learning is scaffolded so that content delivered asynchronously is extended in synchronous sessions.</p> <p>III. Social Design successful when: learning is convivial, transformative and emotionally rich when it acknowledges personal challenges and enables peer support and collaboration in mana-affirming ways.</p>
<p><u>Uniqueness of case situation for multicase research:</u></p> <p>Findings indicate that course design that honours indigenous ways of knowing and being, enacts te ao Māori principles and incorporates diverse learning practices can create inclusive and equitable quality education.</p> <p>The first 4-weeks are key to set the tone for what follows and to introduce students to Māori aspirations for society and health and well-being services.</p>	
<p><u>Relevance of case for cross-case themes:</u></p> <p>Theme 1 (Research Question): High relevance</p> <p>Theme 2 (Sub-question 1): High relevance</p> <p>Theme 3 (Sub-question 2): High relevance</p>	<p><u>Possible excerpts for cross-case report: (Section...)</u></p> <p>7.4.5 “No one is left behind” (P1)</p> <p>7.4.7 “Uncomfortable but in a good way” (SP2)</p> <p>7.4.9 “So, if you're comfortable in who you are, where you come from, your cultural positioning inside Aotearoa, your obligations and responsibilities to Te Tiriti o Waitangi, then that's a huge foundation to be able to go out and help others.” (Kaiako 1)</p>

<p><u>General Factors (influences):</u></p> <p>Asynchronous learning and synchronous noho marae continued as planned without COVID-19 lockdown disruptions.</p> <p>Kaiako immersed in te ao Māori and able to create an authentic, culturally respectful and inclusive context within the course and the noho for students of many cultures to develop their knowledge and skill for professional practice.</p>	<p><u>Situational Factors (influences):</u></p> <p>Ako interchanges and transformative relationship between students and teachers.</p> <p>During the noho, Kaiako (teachers) were huddling and working collaboratively as they checked student energy levels and noticed group dynamics → redesign in the moment.</p> <p>Physical location on the marae, welcomed by kaumātua (leading elders). First time experience on a marae for some students.</p>
<p><u>Commentary:</u></p> <p>Productive, hybrid learning is evident in the collaborations and growing sense of connection with peers and teachers, when learning takes an ecological perspective by transforming student understanding of patient populations and of their experiences of health and wellbeing within the environment and ecosystem.</p>	

Source: Stake (2006) <https://www.guilford.com/add/forms/stake.pdf>

Appendix 10 Readiness for lecturing in HLE (Self-auditing tool)

Location / Space		Yes / No	Novice	Advcd Beginner	Competent	Proficient	Expert	Comments / Requests for help
	I have a room/space in which I can close the door to talk and teach							
	I have a mentor to support me over the next 6 months							
	I have been asked to sit in on a Zoom teaching session to observe							
	Learners							
390	I can actively engage learners during on-campus sessions.							
	I can actively engage learners during online sessions.							
	I can facilitate group work on-campus							
	I can facilitate group work in Zoom breakout (BO) rooms							
	Session planning							
	I can write competency-based learning outcomes (Lenburg et al., 2009)							

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	I can include 4A aspects: A nchoring the topic, A dding detail, opportunity for the learners to A pply the content and include an A way component. (Vella, 2008)							
	I can determine what content is appropriate for synchronous and/or asynchronous learning sessions							
	I can plan synchronous learning sessions							
	I can plan asynchronous learning sessions							
	In session, I have a strategy to resist answering my own questions							
	I can develop a run sheet for a session so that another colleague could teach it if I am unable to.							
Technology								
	I can navigate documents and resources on 3 screens							
	I know how to use Alt + Tab to switch presentation windows							
	I can support learners to split their screen to have Zoom on one half and something else on the other half.							

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	I can log an IT helpdesk request for.... [list the usual various requests]							
	I know the phone number for urgent IT help desk assistance							
Zoom meetings								
	I can create a Zoom meeting and adjust the settings to allow for: videos on, use of annotations / whiteboard/Alternative hosts/ recording to web-based video storage / Document uploads							
	I can paste prepared text chat into Zoom text chat							
	I can paste documents into text chat							
	I can apply a non-distracting background to my camera view							
	I can create pre-learning activities that scaffold learners to prepare them for the teaching session.							
	I am able to troubleshoot participant access, technical issues during a Zoom session							
	I can create a convivial learning environment.							

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Zoom Participants								
	I can monitor the participant panel to rename, mute and monitor the participant reactions to manage the space							
	I can monitor the chat text panel, and respond with emoticons, text, share documents							
Zoom Break Out (BO) Rooms								
	I can manage breakout rooms: setting up, allocating participants, moving participants, broadcast messages, share main screen to BO rooms, close rooms							
	I can send broadcast messages to pptns in BO rooms							
	I can share the main Zoom room screen to BO rooms							
	I can allocate participants to BO rooms							
	I can move participants between BO rooms							
	I can send presenters/lecturers to a BO room							
Online External Engagement Tools								
	I can locate the year group engagement tool resources, e.g. PollEv site, Kahoots, Padlets							

	I can set up engagement activities, e.g. PollEv questions							
	I can decide on the most appropriate learning activity, e.g. Clickable image, Upvote, MCQ – 1 answer, MCQ multiple answers, Word cloud, Text wall							
	I can respond, in the moment, to correct and incorrect answers to engagement activities, e.g. PollEv questions							
Learning Management System (LMS)								
	I can add the Zoom Room URL link to an image in the LMS course site.							
	I can embed a file into a LMS course site section using the embed file process.							
	I can setup and edit a LMS Book (used for topic content in workshop or in lab)							
	I can copy HTML coding from processed Zoom room video recording to embed video in LMS course section							
	I know how to time forum posts so that weekly posts are sent on a set day/time each week.							
	I am aware of requirements for LMS Course Rollover							

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	I have scheduled the annual updating of LMS course resources							
Assessments								
	I can align assessments with course learning outcomes							
	I can create assessment briefs for students							
	I can create short instructional, assessment overview videos for students							
	I can develop marking rubrics and differentiate grade band gradations							
	Andragogy (Malcolm Knowles)							
	I can incorporate an adult learner's need to know							
	I can identify self-directed, autonomous content for learners							
	I can incorporate learners' prior knowledge							
	I can leverage learners' readiness for learning to optimise engagement in the learning process							
	I can consider contextualising the content to a learner's relevant experience							
	I can incorporate a learner's motivation to learn							

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Heutagogy	(Blaschke, Bozkurt & Cormier, 2021)							
	I can find ways for a learner to decide, what, when, where and how they learn the course content (Agency).							
	I can develop learning resources that offer learners agency.							

Appendix 11 Publication – Green (2022)



GRADUATE
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STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the student and the student's main supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the student's contribution as indicated below in the Statement of Originality.	
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Name and title of main supervisor:	Associate Professor Lucila Carvalho
In which chapter is the manuscript/published work?	Appendices
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Student's signature:	JK Green Digitally signed by JK Green Date: 2025.12.19 11:38:12 +13'00'
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Designing Hybrid Spaces for Learning in Higher Education Health Contexts

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Abstract

In Aotearoa New Zealand, undergraduate, professional health courses include social work, nursing, and biosciences courses that focus on learning how to support people with physical, mental, spiritual, and psychosocial/relational health and well-being concerns. Recently, the need for a nuanced understanding of how technologies might extend students' experiences across and beyond physical classrooms has emerged. Drawing on contemporary ecological perspectives in education, this paper emphasises that design for learning involves a complex web of elements. Anchored in practice theory, the paper uses the analytical lens of the Activity-Centred Analysis and Design (ACAD) framework to explore how tools, tasks, and various social arrangements influence student learning activity. A multiple case study investigated the experiences and insights of five higher education teacher-designers, discussing the relationship between features of course design and their perceived impact on emergent learning activity. Design elements are also discussed in relation to the experience of teacher-designers adapting and transitioning to hybrid environments during Covid-19, whilst working with diverse learners in different contexts and disciplines. Interviews with teacher-designers revealed what they believe contributes to productive learning activity, such as the importance of creating safe learning environments, an overall appreciation for the opportunity to use technology for teaching and learning, and their use of a heutagogical approach, which emphasizes the development of knowledge and skills for teaching in hybrid learning environments. The paper argues for practical and targeted support to acknowledge, encourage, and enhance teacher-designers' capabilities for transformational use of hybrid learning environments in health education.

Keywords Higher education · Undergraduates · Health education · ACAD framework · Hybrid learning design · Quality education

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Introduction

Over the past 40 years, undergraduate, health professional, higher education (HE) in Aotearoa New Zealand has been moving away from traditional pedagogical strategies centred around students listening to a lecture from an expert in a tiered seating theatre — the ‘sage-on-the-stage’ mode of teaching (King 1993). An important premise of effective healthcare is building rapport and establishing a therapeutic relationship between the provider and the recipient of care; so, in addition to traditional lessons in lecture theatres, students also attend sessions focused on developing skills and knowledge for clinical practice. These practical demonstrations are usually held in real healthcare settings with actual clients or in spaces set up to mimic healthcare rooms, such as a ward or clinic setting, with either students, actors, or manikins being the ‘client’.

In real clinical settings, the mantra used to be ‘see one’, ‘do one’, and ‘teach one’ with students being put in a position of responsibility for direct client care, at times with minimal knowledge and preparation. There is now a growing awareness of the need to prepare students differently in the health disciplines with skills required in current clinical environments (such as critical thinking, collaboration, problem solving, and clinical decision-making) which has prompted a shift in teaching practices (Malik et al. 2017; Santos et al. 2019). Some of these changes include collaborative activities, testing the use of models of care on peers before using them on patients, practical application of theoretical ideas, linking content to real resources used in professional practice, and creating learning opportunities to practice the application of models of care and develop their skills in a safe and supported environment, whilst also encouraging them to experience a variety of social group formations well before interacting with actual patients. The healthcare courses within this study are part of health education and graduates of these courses will enter a wide range of careers which may not be necessarily focused on healthcare. Hereafter, the broader term of health education will be used.

Technology can be integrated in a range of scenarios in health education and can include a PowerPoint presentation in a lecture theatre, to highly complex activities, such as those involving the use of VR/AR and hi-fidelity simulations, to allow students to safely practice specific health procedures and processes (Dubovi 2018; Shorey et al. 2019; Taçgın 2020). However, as Bayne (2015) and Fawns (2019) argued, technology is only part of the picture, and called for more nuanced understanding of how multiple elements contribute to extending students’ experiences across and beyond physical classrooms. This research draws on contemporary ecological perspectives that emphasise design for learning as part of a complex web of elements involving digital and material tools, tasks,

and people and how these elements together might contribute to create productive learning environments (Carvalho et al. 2017; Damşa et al. 2019; Fawns et al. 2019). In this paper, the term ‘hybrid learning’ is used in relation to educational design and practice in postdigital spaces for learning. ‘Hybrid learning’ incorporates a variety of possible arrangements in health education, such as those combining digital and material elements, online and face-to-face spaces, and formal and informal learning and demonstrates how various forms of learning might coexist (Fawns 2019; Gil et al. 2021; Goodyear 2020). Indeed, Goodyear (2020) highlights the importance of theorising practices within learning space design and the many elements influencing the practical realities of hybrid learning for those involved in learning activities. In this article, ‘teacher’ refers to academic staff who support the learning of others, ‘teacher-designers’ are those who design for learning within their own courses, and ‘learning developers’ are specialists in course development and design for learning.

This article reports on interviews with five teacher-designers conducted at a time when courses were proceeding as face-to-face, on-campus teaching and learning activity but after a short period of pandemic restrictions in Aotearoa New Zealand. This research explores what these teacher-designers believe contributes to creating productive, hybrid learning environments in their undergraduate health education courses. The health education disciplines encompass social work, nursing, and biosciences taught in a higher education institution in Aotearoa New Zealand. The interviewees report on a broad scope of synchronous and asynchronous hybrid environments and include (i) on-campus activity at physical classrooms, lectures, tutorials, and simulation labs (each contingent on the people and technologies involved), (ii) courses in which the interactions and teaching mode relied heavily on technology via an Internet connection such as a learning management system (LMS) and video conference software, and (iii) course activity beyond these traditional university settings, such as an overnight marae-centred learning and living activity with lecturers, tutors (teaching assistants), and course participants sleeping, eating, and learning in the indigenous (Māori), space-based context of a noho marae (a live-in, learning event that occurs over two days). All interviews were conducted after the emergence of Covid-19 pandemic and findings discuss health educators’ experiences of teaching and learning with a focus on how these educators see the design of innovative hybrid environments contributing to their students’ learning. The next section offers an overview of the use of technology in health education.

Technology in Health Education

Since the mid-1990s, the use of technology has existed within health education with varying degrees of acceptance. Research on the use of technology for teaching and learning includes its application to increase social interactivity within a community of inquiry (Hayes and Graham 2019); use of technology by students in assessing, engaging, and augmenting course resources (Henderson et al. 2017); and the flexibility afforded by virtual reality simulation in synchronous and asynchronous learning environments, which enable students to repeat the simulation as many

times as they prefer, dependent on personal learning needs and the available time (Taçgın 2020). There are also studies focusing on the development of communication skills for virtual counselling using artificial intelligence (Shorey et al. 2019) and ways of using technology to enhance clinical reasoning (Dubovi 2018). Interprofessional communication in clinical settings was found to be enhanced through the use of a virtual hospital in SecondLife (Linden Lab 2016) that mirrored a real hospital (Prasolova-Førland et al. 2018). Santos et al. (2019) integrative review reports an increase in student engagement, critical thinking, and creativity with the use of innovative technology for Higher Education (HE) students. As the authors remind us, alongside these innovative uses of technology in HE, pedagogical dissonance experienced by some teachers also must be addressed, pointing to the importance of targeted professional development to support ongoing change in teaching and learning strategies.

Whilst many studies report positively on the incorporation of technology in learning contexts, diverse issues and barriers have also been identified. These include aspects such as digital literacy and inequalities (Czerniewicz 2018), limited access to resources (Dubovi 2018), physical discomfort and cyber-sickness (Prasolova-Førland et al. 2018), cognitive load (Abeysekera and Dawson 2015), the importance of information technology support, and the erroneous assumption that specific generations of learners will have transferrable digital skills (Green and Huntington 2017).

The literature goes beyond the use of technology for learning to include factors that mediate teaching and learning processes, such as:

- an understanding of andragogical pedagogy (centred around adult learners) (Smith and Kennedy 2019) and heutagogical principles and practices in learning (whereby the learner has agency on what, when and how they learn) (Blaschke 2012),
- the importance of learning facilitator and teacher confidence,
- experience with and awareness of alignment between technology, content and concepts being taught,
- and learner characteristics, expectations, and preparedness for the technology used (Green and Huntington 2017).

Literature on learning design and the use of educational technology not only suggest a number of pathways to optimal learning outcomes (Männistö et al. 2019; Merchant et al. 2014; Taçgın 2020) but also points to some constraints. There is growing disquiet about techno-centric views (Fawns 2019; Fawns et al. 2019) and concerns about using technology to foster individualism and hinder opportunities for collaboration (Vlachopoulos and Makri 2017). A further issue could be ethical concerns related to the collection of vast amounts of digital data as HE becomes more student-focused and metrics-centred (Williamson et al. 2020). In addition, there may be potential dissonance between teacher beliefs and the learning strategies they are attempting to incorporate (Selwyn 2016). There has been a lack of evidence for, and resistance to, the demonstration of underlying pedagogical considerations and designer actions (Boys 2015; Goodyear 2020; Jones and Czerniewicz 2011). Nevertheless, recent research in health education

provides evidence of positive effects of hybrid environments in relation to both explicit (assessments) and implicit (professional behaviour, team dynamics, motivation, and engagement) outcomes (Donkin and Kynn 2021) and discusses ways of strengthening university teachers' design capabilities (Fawns et al. 2021).

Furthermore, it is important that health education aligns with UNESCO (2021) sustainable development goals, responding to the urgent need for quality education (SG4). This requires a robust re-evaluation of learning design in HE to prepare our future health workforce to make the most of rapid innovations in knowledge, skills, and practices and to provide quality, person-centred, empathetic, evidence-based healthcare to support good health and wellbeing (SG3). Research is warranted that incorporates a theoretical basis in learning design practices to investigate relationships between structural elements and students' co-configuration of learning environments.

Framing Educational Design in Health Education

Connecting practice to theory provides an effective way of studying how education practitioners collaborate to address problems, they encounter by either remaining with the status quo or inventing new strategies. Goodyear (2020) asserts that practice theory can provide a lens to examine both structural elements of a learning situation and individual agency as expressed by students. Such understanding can then inform educational strategy development and changes in policy to better support innovation in learning spaces and uses. Although Donkin and Kynn (2021) research has clear, present, team-based learning and future-focused, professional practice outcomes, Goodyear notes that it is rare for learning design to incorporate learning opportunities for both the 'here and now' and transfer to wider learning contexts. The research reported in this article highlights design decisions made by lecturers in HE health courses as they address structural constraints and (re)organise their hybrid environments to support emergent learning activities focused on learner agency and meaning making.

The theoretical framing of this research draws on the Activity Centred Analysis and Design (ACAD) framework (Goodyear and Carvalho 2014), taking an ecological view to incorporate human and non-human factors influencing emergent learning within the learning process. Key to the analysis is the focus on the interplay and connections between digital and material tools, ideas, learning tasks, and people, as part of an assemblage of elements. ACAD has been used in numerous research studies in HE to foreground analysis and design for learning (Green et al. 2020; Sun 2018; Yeoman and Wilson 2019). Authors contend that the framework helps teacher-designers and learning developers to identify key elements within the structural design of a learning network and enables consideration of how these elements relate to the nature of student meaning-making. Figure 1 graphically represents ACAD's overarching key elements.

ACAD supports an analytical investigation through four main structural elements (Goodyear and Carvalho 2014):

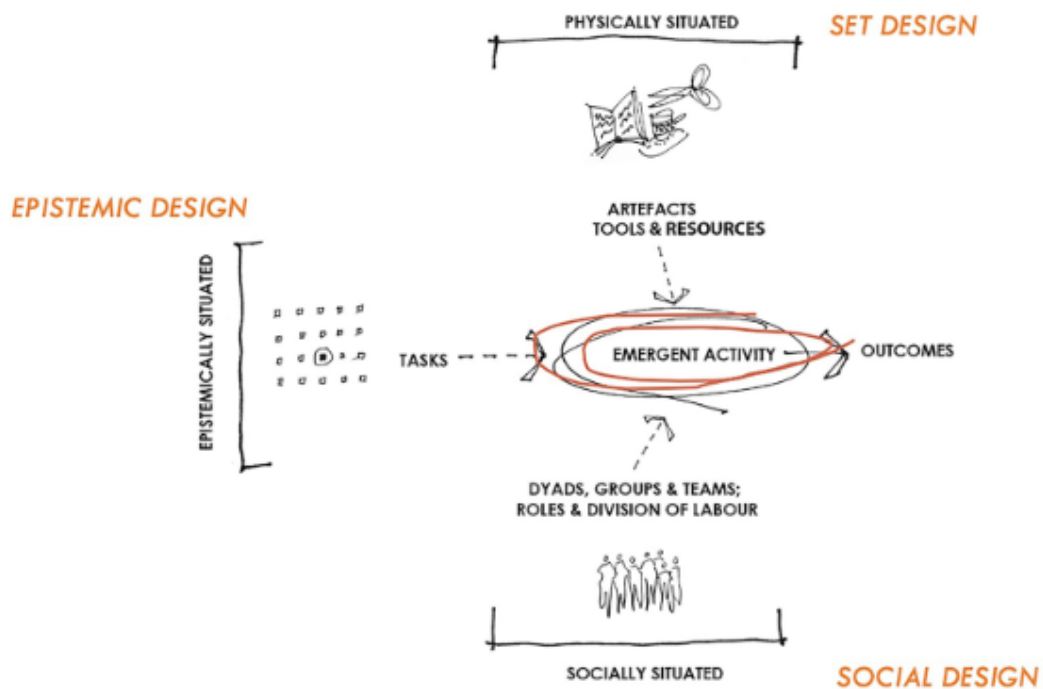


Fig. 1 ACAD framework (adapted from Goodyear and Carvalho 2014: 59)

- Epistemic design: or the design of learning tasks — e.g. organisation of knowledge, considerations about ways of knowing, the selection, sequencing, and pacing of information for meaning-making.
- Set design: or the design of elements in learning spaces (hybrid; online; face-to-face) — e.g. digital and material tools, resources, artefacts, the furniture or tools used, how materials are positioned in a space.
- Social design: or the design of social arrangements for students — e.g. groups, dyads, scripted roles, divisions of labour, the nature of collaboration — in a group or in assessment, the role of the learner.
- Co-creation and co-configuration activity at learn time: refers to the co-creation of knowledge that emerges within a learning activity, the agency of learners.

In this research, ACAD supported the framing of the relationships between the three sets of design elements above (tools, tasks, and various social arrangements) and their influence on learn time activities. Set, social, and epistemic components are the ‘designable elements’ in a learning situation — the elements that are open to alteration or change. Learning activity is not designable, because what students will do cannot be entirely predicted or controlled in advance — activity is therefore emergent. As the emergent activities take place, designable elements are co-configured. Activities respond to an ecosystem of factors that exist in a learning space, at a particular time, location, and with a specific group of learners and teachers (Goodyear et al. 2021; Goodyear and Dimitriadis 2013). This research reports on the experiences and perceptions of teacher-designers transitioning to hybrid environments in courses that catered to diverse student demographics (e.g. ethnic groups — Māori, European, Pacifica,

Asian — age ranges, prior experiences). The next section introduces the research design and methods.

Research Design

This article reports on four cases with five interviewees as part of a multiple case study (Stake 2006) project of undergraduate courses in three health disciplines encompassing social work, nursing, and biosciences in a multi-campus university in Aotearoa New Zealand. Health education topics have been taught at this institution since the mid-1970s. The tools used to gather data for each project case include interviews with health educators and students and observational analyses of course design, looking at how multiple elements are combined and contribute to productive learning hybrid environments. This article focuses on the assemblage of set, social, epistemic design elements, discussing key design elements identified through the analyses of interviews with five teacher-designers, and examining their views of four learning situations about how they saw design co-evolving through student activities.

Data Collection and Analysis

In this study, the researcher conducted five interviews with HE course teacher-designers in social work (2), nursing (1), and biosciences (2). Interviews lasted between 40 minutes and 1 hour, were recorded, and transcribed for analysis. Prior to the individual interviews, each research participant was provided with an information sheet that explained the focus of the research and presented the overarching concepts of the ACAD framework. Verbatim transcripts from interviews were analysed both manually and using NVivo software by the researcher. Using Lincoln and Guba (1985) criteria for establishing trustworthiness and Nowell et al. (2017) outline for thematic analysis, six themes were identified in the data. Tracy (2020) phronetic iterative approach helped identify descriptive primary-cycle codes in the data, with second-level analytical codes incorporating creative interpretation and theoretical knowledge. This approach to thematic analysis is concerned with developing knowledge and practical outcomes in a specific context for practical application and aligns well with Goodyear (2020) encouragement to employ practice theory in research to develop practical knowledge. Interview analysis maintains anonymity by referring to participant one as (P1) and so forth. The next section introduces course descriptions and then delves into emerging themes from interviews, including perceived effects of the necessary course changes due to Covid-19.

Teacher-Designers and Course Design

The five teacher-designers are female and have between 6- and 22-year experiences of teaching and designing for learning in higher education. Each undergraduate degree consists of a range of compulsory or elective, 15- to 45-credit courses that

Table 1 Course details

	Course 1	Course 2	Course 3	Course 4
Participants	(P1)	(P2)	(P3 and P4)	(P5)
Undergraduate course area	Social work	Social policy	Generic health sciences — pharmacology	Nursing
Year level	3rd year	4th year	2nd year	3rd year
Number of students	59	8	175 (172 nursing students)	152

combine for a total of 360 credits. Table 1 summarizes general information about each of the four courses in the study.

Aspects related to the diversity of students in terms of ethnicity, age range, and gender are illustrated in Tables 2, 3, and 4, respectively. Table 2 shows that while the majority of students are from an NZ European background many students identify with two or three ethnicities. Nursing and pharmacology have lower percentages of Māori and Pacific Peoples than the current national population percentage, whilst social work has higher for these but a lower percentage of Asian ethnicity students (Statistics New Zealand 2019).

The age ranges within these courses are representative of students who are two or more years post high school, or who have returned to higher education study, to pursue a health career.

Students in health courses are typically allocated time at healthcare organisations for short periods over a semester in addition to attending lecturers, tutorials, and labs at the university. This is reflected in their timetable with an absence of scheduled lectures, tutorials, or labs for a period, which is usually planned well in advance for the entire cohort located at three campuses. However, each campus has dates that may differ due to local placement provider requirements. Table 5 highlights core design components of each course according to the epistemic, set, and social design dimensions of the ACAD framework.

This overarching structure includes adaptations to changed circumstances in health education contexts, in response to Covid-19 in Aotearoa New Zealand, which are apparent in the ways that these teacher-designers reconfigured their courses. Design transformations were evident when teacher-designers report having to

Table 2 Students' ethnicity (percentage)

	Course 1	Course 2	Course 3	Course 4	Aotearoa NZ Popn
Māori	38.9%	37.5%	16%	11.8%	16.5%
NZ European	71.2%	75%	76.6%	71.7%	70.2%
Pacific Peoples	11.8%		5.1%	5.1%	8.1%
Asian	5.1%		12%	15.8%	15.1%
Middle Eastern/Latin American/African/ other	5.1%		3.4%	5.3%	2.7%
Other European	13.5%	12.5%	9.7%	12.5%	(Included in other above)

Table 3 Students' age range (percentage)

	Course 1	Course 2	Course 3	Course 4
< 20 yrs			30.3%	
20-29 yrs	64.4%	75%	57.1%	82.9%
30-39 yrs	18.7%	12.5%	8%	13.2%
40 yrs +	17%	12.5%	4.6%	4%

become familiar with new tools and software. Specific course design decisions had to be accelerated to accommodate new circumstances brought about by the consequences of the pandemic and a desire to be able to pivot to fully online learning should that be required. These are discussed as part of the emerging themes in the next section.

Emerging Themes

Emerging themes revealed a variety of digital and material, social and epistemic elements, and how these are constantly at play within these hybrid learning environments. The interviews were conducted after two Covid-19 lockdown periods in Aotearoa New Zealand, and, not surprisingly, teacher-designers reported on their self-perceptions of changed learning environments, mentioning aspects connected to set design enabling selection, sequencing and pacing of learning content, and social considerations focused on how to support students' learning. The interviewees were mindful of epistemic design to ensure consistency in translating research into educational practice. Enablers and constraints on course design and facilitation were also discussed.

Theme 1: Transformations in Course Design

Prior to the Covid-19 pandemic, course three (Pharmacology), a face-to-face course, was under review for transformation to hybrid mode. After the first Covid-19 outbreak, in the first half of 2020, the course was fast tracked to a fully online mode. The teacher-designers (P3 and P4) acknowledged that whilst this accelerated development was driven by factors outside of their control, it had resulted in a 'fantastic course site with some excellent, interactive learning resources' (P4). The planned redesign of this course involved the teacher-designers working alongside learning developers to incorporate a new HTML5 application of H5P learning activities in the learning management system (LMS). This H5P resource was seen as highly positive in that it

Table 4 Students' gender (percentage)

	Course 1	Course 2	Course 3	Course 4
Female	93.2%	100%	92%	94.7%
Male	6.8%		8%	5.3%

Table 5 Course structural components and ACAD dimensions

ACAD: design for learning elements			
	Epistemic	Social	
		Set	
Course 1 (P1)	Contemporary Māori themes and social services; Follows <i>te ao Māori</i> (the world of Māori) principles; 3 <i>kete</i> (baskets) of knowledge with themes that progress through the course; weekly topics	Primarily online weekly topics via LMS; one overnight, nohoanga marae visit; lecturer short video introductions to topic	Forums used extensively for dialogue; personal blog reflections; various group arrangements
Course 2 (P2)	Social policy theory; government documents; integration of social policy with social work practice; suggested 12-week learning schedule	2 F2F block courses; video conference tutorial; written PDFs and lecture slides	Groups within the F2F block course, groups rearranged during activities
Course 3 (P3&P4)	Weekly pharmacology tasks completing 1 or 2 modules interspersed with catch-up weeks. 12 modules with interactive learning tasks, study guide and completion at any time through semester	Primarily online; interactive modules developed in H5P, written study guide, textbook readings, and video resources all available via LMS; 4 online tutorials using Zoom platform	Students work individually; whole class group
Course 4 (P5)	6 workshops sessions; 6 simulation labs; online learning activities; 6 weeks clinical placement	Hybrid learning environment; online learning, F2F workshops, simulation labs, and clinical placement experience	Individual; small groups; whole class

created a stable, consistent, and interactive learning resource (set) that included current discipline knowledge (epistemic) which students could access at a time and place that suited their clinical placement scheduling. However, the introduction of new types of learning tasks and software was also seen by the teacher-designers as a two-edged sword. On one hand, they welcomed the new format for presenting content in well-designed modules, yet at the same time, they became acutely aware of a lack of professional development in the use and application of unfamiliar learning resources.

I guess other constraints are my ability to keep up with the technology. And how to use it, and not having the time to really receive training to do so. So ... the more you shift [to online] distance the more I think you have to become adept at knowing how to utilize these tools and when they're appropriate to use. (P4)

This statement aligns with Stec et al. (2019) who note that teachers most commonly use technology as a substitute for a lecture or an augmentation of learning rather than for transformational purposes and suggest that faculty need to be aware of, and take into account, diverse student learning needs in order to purposefully include learning tools. Additionally, the authors contend that teachers need time to explore how technology might support their teaching practice.

As previously mentioned, due to the relatively short periods of time for placements at healthcare organisations, flexibility of access to course resources was seen as highly important and drove the redesign of course three into a series of discrete topic-focused modules. At the start of the pandemic, these placements were cancelled, which created the need, in the latter half of 2020, to accommodate the large number of students requiring 'catch-up' placements on a rolling-basis throughout the semester. The result was that, at any point during the semester, there were always a few students on clinical placements and absent from the university's learning environment.

[The course is] structured as twelve modules ... there's a weekly activity or an activity associated with that module. And so, it meant that the [Campus B] students, who had a horrendous time [with the pandemic] because ... [throughout the whole semester groups] were on placement. And all the other variations in between could kind of work away. We opened the course site early and so some of them did start early. (P3)

In addition to having to create a modular course design, teacher-designers also worked on epistemic design while adapting tasks to Zoom tutorials (set design). This required changes in expectations of what they perceived to be lack of engagement. Whilst some teacher-designers noted the importance of having video cameras on during a session, they also acknowledged there were competing demands — too many small visuals, the need for high bandwidth, privacy implications, and effects of creating digital artefacts (videos) during the Zoom sessions.

We'd have fifty or sixty, well you know by time you got those down even if they had their video going, you know you could barely see them could you. (P3)

When you put these lovely backgrounds behind you it's intense, video intensive, so it uses up bandwidth. (P2)

Because we record things online it provides a bit of hesitancy for those sort of personal experiences being verbalized. Because it is going to be Zoomed out to everybody. (P4)

Designing for hybrid learning necessitates consideration of how, when, and why students are seen or need to be seen, privacy issues, and psychological safety (Cleland et al. 2021). It is imperative that teachers communicate expectations with students and acknowledge concerns (Leung et al. 2021) and include learning design decisions that not only facilitate flexibility in access to resources (set design) but also include a pace and sequencing of tasks (epistemic design) to provide a safe environment (social design) and are all cognisant of the impact of transformation.

Theme 2: Supporting and Challenging Students

In designing for learning, the interviewees commented on the importance of creating an emotionally safe place for students where they could be challenged and yet feel able to engage and collaborate with each other (social design). The literature highlights the importance of teacher presence and the positive effect on learner's perceptions (Männistö et al. 2019; Smadi et al. 2019). This was evident in one of the courses which presents historical and recent colonisation experiences within Aotearoa New Zealand and invites students to learn about, consider, and challenge their perceptions of history, their place in it, and the ongoing effects of colonisation (epistemic design). As in other colonised countries, Aotearoa New Zealand is beginning to work through a process of acknowledging that indigenous people (Māori) must be self-determining in their own country. Jackson (2021) proposes embracing an ethic of restoration as a way of applying the Treaty of Waitangi (Te Tiriti o Waitangi) to address what Māori have lost at the hands of the colonisers and suggests that this provides an opportunity for all people to belong, to stand, and to come together mindful of their responsibilities to each other, to the environment, and to justice.

This restoration includes experiencing education beyond ingrained western ideas and frameworks. As such, the course uses a range of resources and tools, starting with familiar discussions in the digital (via an LMS) but moving onto experiencing physical spaces (noho marae) and material artefacts (marae carvings and other artefacts) located at the marae (set design). The teacher-designer acknowledged that the hybridity of the environment allows her students to be on a continuum process of decolonisation; 'you know I've started that fire, let's stoke it a little bit, you can sit in that squirm for a little bit. It's all good, but you know, let's keep moving on' (P1). As students move through the process of attending the noho marae, they develop their understanding to a point where 'they're transformed...it's a kind of liberation' (P1).

In other physical learning settings, lecturers also have an acute awareness of the importance of a positive challenge and of keeping a balanced view since what

is a positive challenge for some may be quite distressing for others. One participant talked about disrupting the usual seating arrangements (set design) as a way of forming new discussion groups (social design) during a block course session (when students have a few days on campus and complete the remainder of the course via distance mode).

I know it puts them out of the comfort zone ... But when we're put outside of our comfort zone, we'll often learn and grow. But there will be some people who will be so scared of that, they can't learn and grow. So, you do have to be alert to that, and if somebody is not feeling comfortable you've got to think, 'Oh, do you want to just stay where you are, or do you want to move? Just move where you would like'. (P2)

Reformatting discussion groups can support multi-dimensional interactions within the class (social design), and such deliberate changes in key designable elements facilitate the emergent co-configuration of learning. This is noted within the nursing simulation lab sessions where the opportunity for repeated practice (set, social and epistemic design) contributes to enhancing future patient safety (Shorey et al. 2018). Repeated practice helps students to develop skills in a practice setting (emergent, co-configuration) before applying these in a real, clinical setting.

It's a safe place. You would never want them to go out into clinical and have to do a patient assessment for the first time, like that, without actually going, 'stop, this is what you need to be doing', and then working through that whole cycle of learning for the students. (P5)

Supporting students is a complex endeavour. As teacher-designers noted the demands of their profession, they showed an awareness about the increasing need to act, at times quickly, in support of student learning and direct them to student services; all whilst acknowledging the personal toll incurred in managing these often-complex student situations.

It's being an expert in the area, an expert in teaching, an expert in the online environment, and an expert in student health and wellbeing sometimes. Which I'm not, so I clearly say, you know, 'this is where you go for that'. But it still affects us. (P4)

The importance of lecturer involvement and tangible and timely support in all aspects of hybrid learning cannot be underestimated. This was evident in the way that P2 recognised the need for creating an environment in which students want to learn and are supported to co-configure their learning.

I think students learn more from each other than they do from us ... someone was saying, ... 'I expect to be taught'. It was in conversation here around my bench, we were chatting away, and I said, 'No, you don't, you don't. I don't teach! I try to create an environment within which you can learn, so I try to make it as interesting as possible that you want to learn'. (P2)

The creation of moments for interactions and support for student engagement were also highlighted. The approach of one of the lecturers was grounded on a *te ao Māori* (the Māori worldview) principle of the entire group moving together (social design). Māori are a collective society, and the group moving forward together is more important than an individual progressing. When collaborating and engaging in course forums, students shared knowledge about readings, videos, whakatauki (proverbs), and historical records, and this was seen as essential for the collective co-construction of knowledge by students. Course content was presented sequentially, with the subsequent topic being revealed once the whole group had engaged with the current topic's forum discussion (epistemic design). In this course, the forum was an essential and integral component of set design and influenced the social construction of emergent activities to enhance active engagement in a HE course, a finding aligning with Smith and Kennedy (2019) research into authentic learning with an andragogical focus. The level of student engagement in P1's course called for a commensurate level of teacher involvement to support and create links between student postings. Such involvement was significant at the beginning of the course while norms and expectations were being developed and tapered off, as students became enthused with the discussions and aware of the engagement expectations. The teacher-designer reported a student saying that they were really addicted, like the student could not 'wait to get up in the morning to see, to read all of the posts... the forums' (P1).

In the pharmacology course, student engagement and interactions involved video conferencing via Zoom teaching sessions, and in the nursing course, this was primarily via on-campus laboratory sessions (set design). The teacher-designers in these two courses typically used the LMS forums primarily as a medium to disseminate course events, information, and organisational aspects of the course, rather than for course discussions (epistemic design).

Theme 3: Designing for Teamwork and Maintaining Continuity

Each of the courses included experienced teaching staff, which one could argue potentially accounts for effective teaching team environments and successful collaboration. When discussing an overnight, *noho marae*, P1 noted that, 'It's all run the same, so we all know our jobs... I take the lead role... I go down the night before, I spend some time with [names colleague], we get it all done' (P1). Another teacher-designer compared their undergraduate course to other courses which might involve ten or more teaching staff. In commenting on their own course, they noted, 'I think we are very lucky that ... there are only four of us. And we're pretty much all on the same page' (P3).

Typically, different teachers enact a course design slightly differently with different cohorts — depending on what students do, think, and feel at learn time. These differences may have a more pronounced impact when more than one teacher is involved with a specific cohort or when teaching is distributed across multiple campuses. Reinterpretation of what is core in the content contributes to students experiencing varying degrees of content consistency — course design alone does not

translate into a homogenous experience for all. Teaching is also highly dependent on a lecturer's expertise, experience, and confidence. Participant 5 (P5) notes that this was evident in a series of observed nursing simulation labs. The first lab was facilitated and debriefed by P5, who is experienced in facilitating simulation labs. The remaining labs were facilitated by a clinical expert, unfamiliar with simulation pedagogy, who did not appear to understand the importance of specific, design elements associated with simulation components. In hindsight, P5 realised that there was typically insufficient time to adequately train staff in effective simulation facilitation. 'When you get some person who's new, or filling in for you, to do the simulation, depending on the education that persons' had around how to do the simulation, the students could have a completely different experience.' (P5)

For in-person simulation labs, P5 noted that having well-prepared, skilled, debriefing facilitation is imperative. However, even though Mapes (2019) proposes that teaching consistency is reliant on the stability of teaching staff in HE, the reality is that HE contexts are often subject to the vagaries of short-term, non-tenured contracts. Staff may be asked to 'fill in' a vacant post without an ideal level of expertise whilst acknowledging that someone is required to be 'in front' of the class. In contrast to having an inexperienced lone lecturer, teacher-designers valued a fully online course using a team-teaching approach that enables less experienced staff to be mentored remotely by experienced colleagues.

Many educators who shifted their courses to the online mode during the pandemic have reflected on several challenges and constraints (Rapanta et al. 2021). The HE sector in Aotearoa New Zealand has been financially affected by Covid-19. The constant challenge of income for many institutions was exacerbated with the decline in international student enrolments due to travel restrictions. In addition, HE institutions consistently balance a variety of, at times, competing demands, including room space, timetabling, and staffing. As this research involved different university campuses in different geographic regions, there was also the need for flexibility in order to accommodate different lockdown restrictions. Teachers in the study reported additional constraints arising from managing clinical placements and the need to remove students from courses for weeks at a time.

When I first started it was always, I think five weeks we had of teaching and then placement, and then it became that two of the campuses had five weeks and then [Campus C] only had four weeks. And ... it was becoming more difficult to align those and things. So, we were discussing potentially going online and we just made the decision ... to give it a go. (P3)

This was combined with restrictions on travel, so the move to online modules decreased opportunities for face-to-face, on campus workshops or block courses.

Well, I think, having the, having the experience of Covid this last year ... [which occurred after the initial face-to-face orientation] and also having the experience of having solely online classes, I think that when you have met the group, as a group, at the beginning of the Semester ... that you've got a group, you can see the group and the group sees you. They've seen everyone else, and then to bring them together online is so much easier than if you just start cold

from not having that group experience first and I think that if we were going to move to online learning I would be advocating for wherever possible, and it's not always possible, I know. (P2)

It was clear that Covid-19 related constraints had significant influence on course design for these teacher-designers. For example, P3 and P4 worked together to reconfigure their design into modules giving students access at a time and place that suited their clinical schedules. Epistemic design was explicit in both the structure of the design and on explanations to students for employing this modular approach.

They go in and it's easy to navigate through the content. And they can see where they're going with it, and they can see what they've done, where they're going ... And it all makes sense like there's a rationale behind everything that's on there ... I think they understand that there's a pathway through it. How to get through it and why it's there, and that's not often found in courses. (P4)

Theme 4: Improvisational Theatre—Redesigning for Online Co-configuration

The requirement (at times of heightened Covid-19 responses) to transition from on campus, co-located teaching to synchronous video conferencing on Zoom and physically distanced teaching (set design), also posed salient challenges for teachers, which reverberated on aspects of epistemic and social design. One teacher-designer likened this to moving from improvisational theatre to a scripted, blended approach. They talked about a loss of spontaneous responses to perceived student needs; they could no longer use known resources and experience developed over years of teaching, which in the physical scenario enabled instant responses to student learning needs (Fawns 2019). In comparison, similar responses in the virtual space (Zoom), required prior thought and careful planning for multiple eventualities that may not actually be required.

That's why face-to-face is somewhat easier as well. Because I've got other tools that are quickly brought to play. For example, I might start a discussion, or I might have an online clicker thing, or I might have some worksheets I could pull out. Or I could say, 'hey let's build up a table and we'll each contribute to that table', and those kinds of things are often ad hoc depending upon what kind of feedback I'm getting in the class. And where I see the gaps are, and online you have to have all that prepared ahead of time, right? And you have to assume that they're needed when they may not be needed ... But that ability to sort of say actually let's create a table and do that out in your breakout rooms or whatever. For me that is quite challenging to do ad hoc without having prepared that and actually thought about that ahead of time. (P4)

This quote highlights a spontaneous aspect of the pre-Covid-19 teaching experiences and suggests an interplay of digital and material elements that can coalesce at learn time. For this teacher-designer, students' co-creation was perhaps more noticeable at the physical scenario, where it was easier to 'read the room' and orchestrate

learning activity with suggestions for bringing new elements into action, that is to 're-design on the fly'. For this teacher-designer, it was perhaps easier to see how they could quickly re-configure epistemic design (bringing new tasks) in response to students' activity, in the face-to-face scenario. In contrast, the assemblage of epistemic, set, and social elements in the fully online scenario and its impact on students' activity seemed less obvious. This calls for a reorientation of how co-configuration may also become more evident for these teachers, in fully online learning spaces.

Some teacher-designers expressed a sense of loss in the move away from on campus, in-person teaching sessions, and the resultant loss of their live improvisations in response to audiences and their perceived engagement. Being a teacher in front of an audience was key to their professional persona and raised metaphysical dilemmas. In addition, the move to a remote audience, in which visual and body language cues were less evident (Weitze et al. 2013), resulted in teacher-perceived barriers to effective teaching and learning. This highlights the importance of teacher-designers' awareness of not only what is designable within the ecology of learning elements, but also what is non-designable, that is, the student activities at learn time. Co-configuration of designable elements is influenced by the learners and the context and is contingent on the autonomy and agency of learners during this emergent phase (Sun and Goodyear 2020).

Theme 5: Bringing Research into Authentic Learning Spaces

Higher education contexts endeavour to provide epistemic content and discussions that are informed by research findings and literature. Most of the interviewees commented on the satisfaction of both students and teachers being able to translate research findings into practical application. For one teacher, her research occurred alongside her involvement with the course:

It's put my PhD into practice. So, all my hard research, and stuff, it's put into practice, ... I was studying alongside doing this course. So, I was able to, not trial and error, but I was able to put things in and go, 'oh wow, that made that impact', you know, so this was kind of my ultimate. (P1)

P5 became aware of a framework for nursing care and described how the framework informed the organisation of aspects in set, social, and epistemic design throughout the course.

When I was in my discussion of my PhD I came across that Fundamentals of Care framework. Which is a really good way to think about how you look after patients, and I can see how that Fundamentals of Care can really frame undergraduate nursing. Because it doesn't matter where you are, if you don't do the fundamentals of care then you're actually missing some components of nursing. (P5)

The translation of this research into learning design and practice was noted by P5 as being evident in the emergent activity of students during the course introduction while using this Fundamentals of Care framework (see Theme 6).

Bringing research into the learning space was evident also in the way that one lecturer invited students to research a social policy topic of personal interest and then guided their evaluation in a comparative analysis of national and international policy. Such an example illustrates andragogical learning because of its focus on the learning needs of adults, through the use of authentic contexts, considering their prior experiences and enabling learner agency, overall capitalising on internal motivations for self-directed learning (Knowles et al. 2020).

‘What’s your interest? Tell me what you’re interested in? ...So, how are we going to evaluate this policy?’ It’s a comparative evaluation, so they have to compare this policy in New Zealand, with a policy overseas... So, what is there that we could bring back from overseas to New Zealand, ...we can learn from overseas, but what are the pitfalls of trying to transpose a policy from there to here? (P2)

The focus on authentic learning, developing skills in literature searches, and critically appraising policy for relevance to social work contexts resonates with the findings of Smith and Kennedy (2019) in a nursing context, who emphasised the importance of students experiencing learning in ways that authentically reflect a professional context. The teacher-designers included current research literature and their personal research findings into their epistemic design to create a bridge between research and professional practice.

Theme 6: Student Activity and Indicators of Learning

The ACAD framework emphasises that design elements should be seen in relation to the undesignable emergent activity of students, to their experiences in co-creating knowledge (Goodyear and Carvalho 2014; Goodyear and Dimitriadis 2013). Although this paper has not discussed observational data from student activity, some passages of interviews with teacher-designers highlighted their impressions of such activity and their elation when indicators of learning were evident. The teacher-designers reported that this ranged from students overcoming challenges such as engaging with each other, the teacher, the learning activities, and discipline knowledge.

Every year it’s amazing the stuff they come up with. It’s really cool. So, that’s the beginning of informing it, and then looking at how the Fundamentals of Care can inform their practice for working with people with an acute illness. (P5)

At other times, indicators of learning occurred in assessments. One teacher specifically guided students in the use of literature to demonstrate their own understanding,

So, I don’t want to know what the literature ... tells you. I want to know what you’re thinking. You can back it up with the literature, but I want to know what you’re thinking ... over the years that I’ve done this, I’ve always had students

that have gone, ‘Wow, I didn’t know that!’ Or like it’s kind of transformed their way of thinking. (P1)

Similarly, another teacher-designer spoke of her surprise about what students learn.

Some of those final reports that I read are just so amazing and you’re doing this, ‘Ohh! I never thought of that!’ Because I think that’s amazing when students write things that you go, ‘Oh well isn’t that interesting! I hadn’t thought of that!’, or ‘I didn’t know that’ ... (mimics keyboard entering) ... ‘I’ll just check that they got that right!’ (P2)

The interview findings indicate that all teacher-designers deeply considered multiple elements in set, social, and epistemic design which together seem to have contributed to well-rounded course sites, useful resources, and productive learning experiences. Within the ecology of elements involved, the ability to meet with students in-person, co-located, was perceived as highly influential on subsequent interactions and engagement. Having research active lecturers, who bring research into the learning environment and enable students to apply it in practice, was also perceived as beneficial in preparing students to work on authentic professional settings. The hybrid learning environments appeared to be moderated by teacher engagement, their expertise and fluidity in the use of technology, as well as the stability of their teaching team. The introduction of new technologies, however, often required showcasing and modelling of its application, so teachers could see examples of best practice.

Conclusion

Teaching practices in hybrid learning environments require discipline expertise in combination with careful design, pedagogical strategies, facilitation techniques, technology skills, and platform management expertise. The study suggests a few core principles to guide the design and facilitation in hybrid learning environments. Enhancing flexibility for students’ access and engagement includes finding ways of challenging their thinking whilst maintaining their safety. Creating authentic indicators of learning with direct relevance and applicability in graduate, professional healthcare contexts requires translation of discipline theory into practice. Incorporating the benefit of indigenous ways of learning, as shown in P1’s account of an authentic, *te ao Māori* (the Māori worldview) learning philosophy, can benefit all learners and embrace their diversity. As Fawns et al. (2021) remark, the focus on inclusivity requires continuous dialogue with students, flexible designs for learning, and adaptability at learn time.

As part of the global response to Covid-19, courses in HE were transformed to meet public health physical distancing requirements, clinical placement degree requirements, and practical course delivery considerations. Educators had scant time to prepare for these changes; however, most seemed to have managed to adjust elements and accommodate requirements. The teacher-designers in this study frequently remarked on their process for PD, expressing ambivalence about the often

opportunistic and urgent nature of their preparation to teach in the current environment. Pre-pandemic, PD was commonly a result of individual choices or, at times, necessity, and ranged from sitting and observing how other expert teachers organised and managed their learning environments, through to trial and error, often resulting in significant frustration until proficient. PD needs to reflect a heutagogical approach (Blaschke 2012) to teachers' own learning, whereby professional learning experiences address immediate issues such as taking on a new course, preparation of resources (e.g. edit and upload a recorded video tutorial), or learning how to manage video conferencing platforms in order to manage set design aspects and to support excellent epistemic and social design. However, the urgency for course transformation arising from Covid-19 pandemic responses has challenged purposeful and planned PD.

Overall, living and learning in postdigital times require transformations that acknowledge the hybridity of learning environments or the ecology of elements at play (Carvalho et al. 2017; Damşa et al. 2019; Fawns et al. 2019). It calls for assessing and enhancing ways of seamlessly integrating technology, whilst applying andragogical principles, valuing disciplinary expertise, and supporting lecturers through PD specific to their contexts. The teacher-designers in this study commented on a lack of organised and ongoing, personal learning and development (PD), with most noting that they taught themselves through trial-and-error or developed skills as a result of attendance at a conference simulation workshop. This highlights an opportunity to offer teachers a self-assessment tool (Sailer et al. 2021) so that they can check areas of current expertise and areas for PD. Teaching staff are often time-poor and need agency in planning where, when and how they access opportunities to observe, self-assess, identify learning needs, access targeted PD, and explore how design might support hybrid learning. This could require working on authentic design tasks, finding ways of scaffolding design work, and promoting dialogue with teacher-peers to help teacher-designers better understand the relationship between what is designed ahead of time and what the teacher-designers leave to unfold at learn time (Fawns et al. 2021). It could also include development of a personal teaching tool-kit for hybrid environments that can be used on a 're-design on the fly' basis dependent on student learning needs.

This research highlights the real-world perspective and design decisions (Goodyear 2020) of HE lecturers in health education courses. Further research in this project will look at perspectives of students and support staff and their experiences of the ecology of elements that contribute to productive hybrid learning in health education contexts.

Declarations

Competing Interests Not applicable

References

- Abeyssekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: Definition, rationale and a call for research. *Higher Education Research & Development*, 34(1), 1-14. <https://doi.org/10.1080/07294360.2014.934336>.

- Bayne, S. (2015). What's the matter with 'technology-enhanced learning'? *Learning, Media and Technology*, 40(1), 5-20. <https://doi.org/10.1080/17439884.2014.915851>.
- Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *International Review of Research in Open and Distance Learning*, 13(1), 56-71.
- Boys, J. (2015). *Building better universities: Strategies, spaces, technologies*. Abingdon: Routledge.
- Carvalho, L., Goodyear, P., de Laat, M. (2017). *Place-based spaces for networked learning*. New York: Routledge. <https://doi.org/10.4324/9781315724485>.
- Cleland, J., Yang, L., & Rosby, L. (2021). Cameras on or off: What is the question? *Medical Teacher*, 1. <https://doi.org/10.1080/0142159X.2021.1892049>.
- Czerniewicz, L. (2018). Inequality as higher education goes online. In N. B. Dohn, S. Cranmer, J. Sime, M. De Laat, & T. Ryberg (Eds.). *Networked Learning Research in Networked Learning* (pp. 95-106). Cham: Springer International. https://doi.org/10.1007/978-3-319-74857-3_6.
- Damşa, C., Nerland, M., & Andreidakis, Z. E. (2019). An ecological perspective on learner-constructed learning spaces. *British Journal of Educational Technology*, 50(5), 2075-2089. <https://doi.org/10.1111/bjet.12855>.
- Donkin, R., & Kynn, M. (2021). Does the learning space matter? An evaluation of active learning in a purpose-built technology-rich collaboration studio. *Australasian Journal of Educational Technology*, 37(1), 133-146. <https://doi.org/10.14742/ajet.5872>.
- Dubovi, I. (2018). Designing for online computer-based clinical simulations: Evaluation of instructional approaches. *Nurse Education Today*, 69, 67-73. <https://doi.org/10.1016/j.nedt.2018.07.001>.
- Fawns, T. (2019). Postdigital education in design and practice. *Postdigital Science and Education*, 1(1), 132-145. <https://doi.org/10.1007/s42438-018-0021-8>.
- Fawns, T., Aitken, G., & Jones, D. (2019). Online learning as embodied, socially meaningful experience. *Postdigital Science and Education*, 1(2), 293-297. <https://doi.org/10.1007/s42438-019-00048-9>.
- Fawns, T., Markauskaite, L., Carvalho, L., & Goodyear, P. (forthcoming 2021). H₂m pedagogy: Designing for hybrid learning in medical education. In E. Gil, Y. Mor, Y. Dimitriadis, & C. Köppe (Eds.). *Hybrid learning spaces*. Cham: Springer International.
- Gil, E., Mor, Y., Dimitriadis, Y., & Köppe, C. (Eds.). (forthcoming 2021). *Hybrid learning spaces*. Cham: Springer International.
- Goodyear, P. (2020). Design and co-configuration for hybrid learning: Theorising the practices of learning space design. *British Journal of Educational Technology*, 51(4), 1045-1060. <https://doi.org/10.1111/bjet.12925>.
- Goodyear, P., & Carvalho, L. (2014). Framing the analysis of complex learning environments. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (pp. 48-70). New York: Routledge. <https://doi.org/10.4324/9780203591093>.
- Goodyear, P., Carvalho, L., & Yeoman, P. (2021). Activity-Centred Analysis and Design (ACAD): Core purposes, distinctive qualities and current developments. *Educational Technology Research and Development*, 69(2), 445-464. <https://doi.org/10.1007/s11423-020-09926-7>.
- Goodyear, P., & Dimitriadis, Y. (2013). In medias res: Reframing design for learning. *Research in Learning Technology*, 21(0), 1-13. <https://doi.org/10.3402/rlt.v21i0.19909>.
- Green, J. K., Burrow, M. S., & Carvalho, L. (2020). Designing for transition: Supporting teachers and students cope with emergency remote education. *Postdigital Science and Education*, 2(3), 906-922. <https://doi.org/10.1007/s42438-020-00185-6>.
- Green, J. K., & Huntington, A. D. (2017). Online professional development for digitally differentiated nurses: An action research perspective. *Nurse Education in Practice*, 22, 55-62. <https://doi.org/10.1016/j.nepr.2016.11.009>.
- Hayes, C., & Graham, Y. (2019). Social interactivity as driver and digital technology as vehicle: Facilitating affective domain learning for undergraduates. *Higher Education, Skills and Work-based Learning*, 10(2), 313-324. <https://doi.org/10.1108/HESWBL-05-2019-0068>.
- Henderson, M., Selwyn, N., & Aston, R. (2017). What works and why? Student perceptions of 'useful' digital technology in university teaching and learning. *Studies in Higher Education*, 42(8), 1567-1579. <https://doi.org/10.1080/03075079.2015.1007946>.
- Jackson, M. (2021). Where to next? Decolonisation and the stories in the land. In B. Williams (Ed.), *Imagining decolonisation*. Wellington, NZ: Bridget Williams Books.
- Jones, C., & Czerniewicz, L. (2011). Theory in learning technology. *Research in Learning Technology*, 19(3), 173-177. <https://doi.org/10.1080/21567069.2011.632491>.

- King, A. (1993). From sage on the stage to guide on the side. *College Teaching*, 41(1), 30-35.
- Knowles, M. S., Holton III, E. F., Swanson, R. A., & Robinson, P. A. (2020). *The adult learner: The definitive classic in adult education and human resource development*. 9th Ed. New York: Routledge.
- Leung, H. T. T., Bruce, H., & Korszun, A. (2021). To see or not to see: Should medical educators require students to turn on cameras in online teaching? *Medical Teacher*, 43(9), 1099. <https://doi.org/10.1080/0142159X.2021.1873258>.
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Newbury Park, CA: SAGE.
- Linden Lab. (2016). About Linden Lab. <http://www.lindenlab.com/about>. Accessed 30 May 2021.
- Malik, G., McKenna, L., & Griffiths, D. (2017). Using pedagogical approaches to influence evidence-based practice integration - processes and recommendations: Findings from a grounded theory study. *Journal of Advanced Nursing*, 73(4), 883-893. <https://doi.org/10.1111/jan.13175>.
- Männistö, M., Mikkonen, K., Kuivila, H. M., Virtanen, M., Kyngäs, H., & Kääriäinen, M. (2019). Digital collaborative learning in nursing education: A systematic review. *Scandinavian Journal of Caring Sciences*, 34(2), 280-292. <https://doi.org/10.1111/scs.12743>.
- Mapes, M. (2019). Unjust precarity: Contingent faculty and the introductory communication course. Wicked problems forum: Contingent labor in higher education. *Communication Education*, 68(2), 246-252. <https://doi.org/10.1080/03634523.2019.1571213>.
- Merchant, Z., Goetz, E. T., Cifuentes, L., Keeney-Kennicutt, W., & Davis, T. J. (2014). Effectiveness of virtual reality-based instruction on students' learning outcomes in K-12 and higher education: A meta-analysis. *Computers & Education*, 70, 29-40. <https://doi.org/10.1016/j.compedu.2013.07.033>.
- Nowell, L. S., Norris, J. M., White, D. E., & Moules, N. J. (2017). Thematic analysis: Striving to meet the trustworthiness criteria. *International Journal of Qualitative Methods*, 16(1), 1-13. <https://doi.org/10.1177/1609406917733847>.
- Prasolova-Førland, E., Steinsbekk, A., Fominykh, M., & Lindseth, F. (2018). Practicing interprofessional team communication and collaboration in a smart virtual university hospital. In V. L. Uskov, J. P. Bakken, R. J. Howlett, & L. C. Jain (Eds.), *Smart Innovation, Systems and Technologies* (pp. 191-224). https://doi.org/10.1007/978-3-319-59454-5_7.
- Rapanta, C., Botturi, L., Goodyear, P., Guardia, L., & Koole, M. (2021). Balancing technology, pedagogy and the new normal: Post-pandemic challenges for higher education. *Postdigital Science & Education*. <https://doi.org/10.1007/s42438-021-00249-1>.
- Sailer, M., Stadler, M., Schultz-Pernice, F., Franke, U., Schöffmann, C., Paniotova, V., Husagic, L., & Fischer, F. (2021). Technology-related teaching skills and attitudes: Validation of a scenario-based self-assessment instrument for teachers. *Computers in Human Behavior*, 115. <https://doi.org/10.1016/j.chb.2020.106625>.
- Santos, J., Figueiredo, A. S., & Vieira, M. (2019). Innovative pedagogical practices in higher education: An integrative literature review. *Nurse Education Today*, 72, 12-17. <https://doi.org/10.1016/j.nedt.2018.10.003>.
- Selwyn, N. (2016). *Is technology good for education?* Malden, MA: Polity Press.
- Shin, S., Park, J. H., & Kim, J. H. (2015). Effectiveness of patient simulation in nursing education: Meta-analysis. *Nurse Education Today*, 35(1), 176-182. <https://doi.org/10.1016/j.nedt.2014.09.009>.
- Shorey, S., Ang, E., Yap, J., Ng, E. D., Lau, S. T., & Chui, C. K. (2019). A virtual counselling application using artificial intelligence for communication skills training in nursing education: Development study. *Journal of Medical Internet Research*, 21(10), e14658. <https://doi.org/10.2196/14658>.
- Shorey, S., Kowitlawakul, Y., Devi, M. K., Chen, H. C., Soong, S. K. A., & Ang, E. (2018). Blended learning pedagogy designed for communication module among undergraduate nursing students: A quasi-experimental study. *Nurse Education Today*, 61, 120-126. <https://doi.org/10.1016/j.nedt.2017.11.011>.
- Smadi, O., Parker, S., Gillham, D., & Müller, A. (2019). The applicability of community of inquiry framework to online nursing education: A cross-sectional study. *Nurse Education in Practice*, 34, 17-24. <https://doi.org/10.1016/j.nepr.2018.10.003>.
- Smith, S. B., & Kennedy, S. (2019). Authentic teaching to promote active learning: Redesign of an online RN to BSN evidence-based practice nursing course. *Journal of Professional Nursing*, 36(2), 56-61. <https://doi.org/10.1016/j.profnurs.2019.07.005>.
- Stake, R. E. (2006). *Multiple case study analysis*. New York: The Guilford Press.
- Statistics New Zealand. (2019). New Zealand's population reflects growing diversity. <https://www.stats.govt.nz/news/new-zealands-population-reflects-growing-diversity>. Accessed 13 September 2021.

- Stec, M., Smith, C., & Jacox, E. (2019). Technology enhanced teaching and learning: Exploration of faculty adaptation to ipad delivered curriculum. *Technology, Knowledge and Learning*, 25(3), 651-665. <https://doi.org/10.1007/s10758-019-09401-0>.
- Sun, S. Y. H. (2018). Student configuration and place-making in fully online language learning. *Computer Assisted Language Learning*, 31, 932-959. <https://doi.org/10.1080/09588221.2018.1466808>.
- Sun, S. Y. H., & Goodyear, P. (2020). Social co-configuration in online language learning. *Australasian Journal of Educational Technology*, 36(2), 13-26. <https://doi.org/10.14742/ajet.5102>.
- Taçgın, Z. (2020). The perceived effectiveness regarding Immersive Virtual Reality learning environments changes by the prior knowledge of learners. *Education and Information Technologies*, 25(4), 2791-2809. <https://doi.org/10.1007/s10639-019-10088-0>.
- Tracy, S. J. (2020). *Qualitative research methods: Collecting evidence, crafting analysis, communicating impact*. Hoboken, NJ: Wiley Blackwell.
- UNESCO. (2021). The Sustainable Development Agenda. <https://www.un.org/sustainabledevelopment/development-agenda>. Accessed 30 May 2021.
- Vlachopoulos, D., & Makri, A. (2017). The effect of games and simulations on higher education: A systematic literature review. *International Journal of Educational Technology in Higher Education*, 14(1), 1-33. <https://doi.org/10.1186/s41239-017-0062-1>.
- Weitze, C. L., Ørngreen, R., & Levinsen, K. (2013, 30-31 October 2013). The global classroom video conferencing model and first evaluations. In I. M. Ciussi & M. Augier (Eds.), *Proceedings of the 12th European conference on E-Learning SKEMA Business School*. Reading, UK: Academic Conferences and Publishing International.
- Williamson, B., Bayne, S., & Shay, S. (2020). The datafication of teaching in Higher Education: Critical issues and perspectives. *Teaching in Higher Education*, 25(4), 351-365. <https://doi.org/10.1080/13562517.2020.1748811>.
- Yeoman, P., & Wilson, S. (2019). Designing for situated learning: Understanding the relations between material properties, designed form and emergent learning activity. *British Journal of Educational Technology*, 50(5), 2090-2108. <https://doi.org/10.1111/bjet.12856>.

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Appendix 12 Publication – Green et al. (2020)



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Designing for Transition: Supporting Teachers and Students Cope with Emergency Remote Education

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Abstract

The global pandemic reached New Zealand in the middle of a teaching semester, calling educators to rapidly transition into a fully online teaching mode. Covid-19 brought fears for the unknown and required an abrupt shift, creating anxiety for academic staff, students and parents. Amidst this transition, educators had to quickly reconfigure their designs, as specific pedagogical strategies set for in-class arrangements would no longer be appropriate for the new scenario. A whiplash redirect to the online mode introduced new tools and added uncertainties about Internet access and connectivity. People had to deal with remoteness and isolation and with changes to virtual learning. This paper theorizes about what it means to design for transition during an emergency. Drawing on the Activity-Centred Analysis and Design (ACAD) framework, we discuss implications for educational design, detailing how tools, social arrangements and tasks can be carefully orchestrated to support learning activity in emergency remote education. We situate the discussion within the transitioning experiences of students and staff at a Bachelor of Nursing programme, within a three-phased educational design which involved Virtual Happy Hours (VHH). The VHH sessions were run with two cohort groups of first- and second-year students in the Bachelor programme—and included their teaching staff. The intent of the VHH was to allow participants to familiarize themselves with tools, tasks and social elements that could be (re)used to facilitate engagement in a new online space—in preparation to the upcoming course sessions in the lockdown period.

Keywords Design for learning · Covid-19 · Hybrid learning · Postdigital · Nursing education · Undergraduate

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Introduction

The Covid-19 outbreak emerged in New Zealand in early 2020, its arrival coinciding with the middle of a teaching semester. Like elsewhere across the globe, universities and schools had to rapidly transition to online and digital education formats, adopting remote modes of teaching and learning, whilst impending closures of all schools and universities were being announced. The event brought anxiety for many teaching staff and students, in a mix that included health and economic concerns for the unknown circumstances of the future ahead, and also elevated education to an ‘emergency matter’ category, with remote learning and educational technologies repositioned as essential services—as a frontline emergency service (Williamson et al. 2020).

The embedding of digital technologies as part of education practices are not new nor unique to the global pandemic—distance education and networked learning have been around for many years. Traditionally, the online mode has been associated with ideas of flexibility of teaching and learning anywhere, anytime (Hodges et al. 2020). But recent discussions in the field have been arguing for a postdigital perspective in education, challenging the usefulness of binary distinctions that place learning activity as face-to-face *or* online, foregrounding that both the digital and non-digital, material and social, are intrinsically interconnected in educational design and in the unfolding teaching and learning activities (Carvalho et al. 2017; Fawns 2019; Jandrić et al. 2018; Ryberg and Sinclair 2016). A broader understanding of learning also suggests that learning does not only happen when students and teachers are together in a classroom (or in an online space) - learning can be connected to work that is outside allocated spaces and set times for education, for example, as students are writing in a library, or exchanging ideas in the cafeteria, or reading on public transport (Gourlay and Oliver 2018). Learning activity might involve searching, finding, selecting topics of interest, reading and writing texts, reflecting on experiences, creating knowledge artefacts, communicating ideas and participating in synchronous or asynchronous sessions with teachers and peers. In many of these activities, a mix of digital and material tools, ideas and people may be at play.

Still, there was a clear perception in early 2020 that a ‘move to the online’ sphere was taking place, even if such a move was not necessarily new. The difference in the Covid-19 scenario was the speed and urgency with which ‘the move’ was expected to happen and how ‘the move’ itself was surrounded by anxiety about an unknown situation that involved a global pandemic. Different countries had more or less numbers of cases and deaths, but this sense of ‘emergency’ was a shared worldwide experience, arguably acutely felt by educators, students and parents—from kindergarten through to higher education.

Essentially, for educators, this transitioning moment required quickly redesigning what they had prepared in advance for the teaching semester; plans for what once would shape face-to-face classroom activity of teachers and students at certain allocated spaces and times now required transition to incorporate tools, tasks and social arrangements in an online environment. At non-pandemic times, similar redesign has long been considered a complex endeavour. Teaching requires investment in specific pedagogical strategies, and in any type of setting (whether it involves synchronous or asynchronous interactions, ‘online’ or ‘off-line’), it includes backstage orchestration of tools, tasks and social organization to foster productive learning activity. What happens

at learntime—or the moment when teachers and students interact—has usually been carefully planned in advance, through choices made by educators about types of tools and resources that will be available to students, the pacing and sequencing of knowledge and decisions about specific social arrangements, such as group work and individual tasks. A whiplash redirect to an online mode introduced different elements, such as having added uncertainties about Internet access or connectivity, learning about new types of technology and how to handle/manage an online synchronous/asynchronous space, feelings of isolation and remoteness and preoccupation about performativity in virtual environments, all amidst personal circumstances and concerns about health and economic affairs. As such, the sudden shift to a fully online mode was marked by the need for educators to quickly figure out how to redesign their own courses—to think about ways of adapting what had been prepared for the semester ahead to fit a new mode and with new tools. Educators also needed to account for the affective dimension associated with the shift. In this paper, we theorize about what it means to design for transition as part of an emergency response to remote education during the Covid-19 outbreak. Drawing on a networked learning perspective—the Activity-Centred Analysis and Design (ACAD) framework (Goodyear and Carvalho 2014)—we discuss the reconfiguring of university courses through a case study, experienced at a New Zealand University. We detail how tools, social arrangements and tasks carefully scaffolded students and teachers into experiencing a new learning environment—and the underlying design intentions at each step of the way. The paper shows that as teaching staff and students were getting ready to go ‘live’ with online teaching and learning in the Bachelor of Nursing programme, a series of Virtual Happy Hours (VHH) using a video conferencing platform was created. Cohort groups for each year in the Bachelor of Nursing had opportunities to participate in the VHH sessions, which were carefully designed to pace their transitioning experience into a new mode. By deliberately not including disciplinary knowledge, these sessions were run as fun events albeit, as we will show, these were essentially also learning events, which allowed two aspects of the transitioning process to be addressed. First, they created opportunities for bringing people together to experience a fun activity in times of deep distress. Second, they offered moments to learn about how to navigate a new learning environment, at low stakes learning sessions. In so doing, they helped students and teachers to manage anxiety related to learning something new on the run. Challenges associated with the redesign also emerged, such as how to sensitively identify and address the emotional elements associated with the Covid-19 scenario and how to identify and support those experiencing digital inequalities (Czerniewicz 2018).

Designing for Transition in a Postdigital Era

Design for learning not only involves coming up with learning tasks or suggestions of things for students to do but also includes intricate considerations about how social and physical elements may come together to influence the emergent learning activity (Goodyear and Carvalho 2014). Whilst design often provides a structure that will influence learning activity, Goodyear and Dimitriadis (2013) remind us to be wary of assumptions about learners’ compliance—as learners have autonomy to interact, rearrange and co-configure whatever is proposed. At times, considerations about the digital seem to make design issues more salient,

perhaps because there is an element of novelty in those contexts (Beetham and Sharpe 2019; Fawns 2019). But the digital (along with the material) should be seen as a part of the physical. It is perhaps easier to notice this interconnectedness in the physical environment of a ‘face-to-face’ classroom, when we consider that a face-to-face scenario might often involve students using a laptop and the Internet to do some research on a given topic; a teacher may decide to present a YouTube clip for discussion; or students and teachers may communicate via a Learning Management System on a given task whilst still co-present in the physical space. Indeed, these types of scenarios raise questions about the boundaries of a ‘learning environment’ that distinguishes ‘face-to-face classroom activity’ from ‘online activity’.

Similarly, recent debates in education have been critical of the use of terms such as ‘online learning’ or notions that imply that learning is happening in an online or digital world, detached from the physical realm, as if one is disembodied (Fawns et al. 2019). Bayne and Jandrić (in Jandrić 2017) suggest that our interactions with the digital should not be understood as a disembodied experience, but, instead, as involving co-presence in multiple spaces which we all inhabit in our everyday lives. In other words, the digital and physical spaces are inextricably linked. It is possible to be in a cafe and yet be talking to a friend overseas. People may be attending an online seminar, but their physical bodies are still grounded on the surroundings of their bedrooms or lounges at home. Whilst some may use terms such as blended-learning, online-based or classroom-based teaching to try to differentiate between design scenarios, these characterizations are not necessarily useful when seen in isolation. Every design scenario will require consideration about an intricate web of elements—including the learning tasks, the digital and materials at hand, different ways people may be organized and specific arrangements of furniture in the space.

The pandemic reached us all in this postdigital era, and so within the Covid-19 scenario, many conversations emerged about how the boundaries between work and home, university and home, were now being perceived as morphed into one single experience. The impact of people’s situation at home seemed to make this notion of postdigital much more evident, as people’s situations were more salient, for example, for those who were now home-schooling their children whilst having to work/study from home, those who had to take turns and share one computer amongst diverse family members and those trapped into an unsafe household.

Overall, a postdigital perspective calls for education to be seen as not an entirely physical nor entirely online endeavour. Instead, learning activity is understood as often involving a complex combination of elements—which include digital and material tools and resources, ideas, tasks and people, all enmeshed in a network of elements (Carvalho et al. 2017; Fawns 2019; Jandrić et al. 2018; Ryberg and Sinclair 2016). Our research takes a networked learning perspective, which in its essence reflects relationships between technologies and the processes of learning and education (Jones 2015). Networked learning has been around since the early 1990s, when it emerged as primarily connected to the use of technology for learning within the tertiary sector. Technology has since significantly evolved, transforming and extending learning experiences through ubiquitous and portable technologies, and accordingly, networked learning has also evolved and shifted from its initial focus in higher education to embrace broader educational practices, such as those connected to informal learning, work-based and professional development (Hodgson et al. 2014).

Networked learning combines ideas from critical theory and implies an active social role with individual agency of learners and educators (Hodgson et al. 2012; Jandrić and Boras 2015; Jones 2015). In taking a networked learning stance, one focuses on openness and fluidity, on support and building shared understandings of a particular phenomenon and on promoting cooperation and collaboration in the learning process (Hodgson and McConnell 2019). A high value is placed on group and community work and on learning through discussion and dialogue. As Hodgson and McConnell (2019) highlight, there is value in the ‘difference’, and this ‘valuing of difference’ plays a key role in the learning process. Importantly, networked learning embodies a socio-material dimension, as it involves the use of technology to connect and mediate learning activity (Goodyear et al. 2004; Hodgson and McConnell 2019).

Within the Covid-19 context, and in considering how to design for transition in a university Bachelor programme, we were acutely aware about the importance of using technology to promote connections, collaboration and participation. We were also aware that a range of elements would be likely to be at play in terms of digital tools, tasks and social structures. But two elements were also brought to the fore in the scenario of emergency remote education. First, it raised considerations about people’s affective mood, and the need to acknowledge and support those experiencing physical and mental distress. In our design, we needed to consider these issues as part of our social structure. Second, there were issues associated with digital access and connectivity, and a potential gap often referred to as digital inequality (Czerniewicz 2018) became more salient. As Czerniewicz (2018) explains, inequality of resources is only one of the inequality dimensions. Whilst economic issues such as costs of data and availability of connectivity may be at play, there are also other issues associated with cultural capital (e.g. digital literacies) and issues that ultimately may greatly impact one’s life and self-development, autonomy, freedom, etc. This was particularly relevant in a scenario where education was suddenly elevated to an ‘emergency matter’ category or as remote learning and educational technologies were being repositioned as essential services (Williamson et al. 2020). In what follows, we introduce the analytical ideas that we used to frame the structural elements in the design for transition and to theorize how these elements were likely to influence learning activity at hybrid learning spaces. We then illustrate and discuss broader principles for how one may design for transition in a remote education emergency.

Framing Learning Activity—Set, Social and Epistemic Design

Carvalho and Goodyear (2019) refer to learning networks as a phenomenon for inquiry where the main focus is on understanding what participants in a network are coming to know, for what purposes do they come together, what strategies they use and what tools and resources are available to them. In order to understand the functioning of a productive learning network, researchers need to identify and investigate various elements involved in a network, examining their relations and boundaries. This understanding can then be used to improve existing designs and/or to (re)design for the needs of other learning networks. The analytical lenses of the ACAD framework (Goodyear and Carvalho 2014) helped us identify and abstract a structural composition within the constraints of a case study within the Bachelor of Nursing at a New Zealand University

and to then formulate principles to be considered when designing for transition for remote emergency education more broadly.

The ACAD framework is now a well-established metatheoretical framework, which has helped many educational designers and researchers to foreground connections between designable elements and emergent learning activity in a range of learning situations (Goodyear and Carvalho 2014; Carvalho and Yeoman 2018, 2019; Munoz et al. 2018). The designable elements acknowledge the physical, social and epistemic nature of learning and are conceptualized through three dimensions of design—set design, epistemic design and social design. Set design refers to digital and material elements in a learning situation. It acknowledges that as part of the design process, educators make choices about digital tools and platforms and/or material elements that will be available to learners, such as pen and paper, smartphones and apps or arrangements of furniture in a classroom. As part of this dimension, one would include considerations about resources, such as availability of laptops and data costs which may impact learners in an emergency situation. Epistemic design refers to the learning task—as educators make choices about things for learners to do and consider ways of structuring (sequencing and pacing) knowledge and information. The nature of social arrangements is enacted through social design and may refer, for example, to the formation of groups, having scripted roles or scaffolds for the division of labour. In many educational settings, attention is often paid to the epistemic and social design, whereas the role of the digital and material elements tends to still receive less emphasis. ACAD reminds us that these three dimensions are important when designing for learning, and they all influence learning activity. A fourth dimension of the ACAD framework acknowledges learners' agency to re-configure and co-construct what has been designed in advance by educators. This dimension foregrounds learning activity as emergent and is referred to as the co-creation activity (see Fig. 1).

At learn-time, choices for elements in set, epistemic and social design become an assemblage of elements, and as learners interact with this assemblage, they may re-shape and co-configure what has been proposed as they exercise their agency to co-create. In what follows, we draw on the ACAD framework detailing the rationale adopted to design for transition in emergency remote education. The rationale builds on the experience of supporting teachers and students in the Bachelor of Nursing as they transitioned from an emphasis on face-to-face interactions to one that would include the use of video conferencing during the pandemic outbreak.

Virtual Happy Hours—Scaffolding the Use of Tools and Social Arrangements

Participants

This study involved two cohort groups of first- and second-year students enrolled in the Bachelor of Nursing, which comprised approximately 300 students in total and 27 academics and tutors. Two VHH sessions were organized with the year one and two cohort groups. Two academic staff from the Bachelor of Nursing with expertise in online teaching and learning acted as VHH facilitators of these sessions. All students and teaching staff were invited to participate in the VHH sessions—automatically

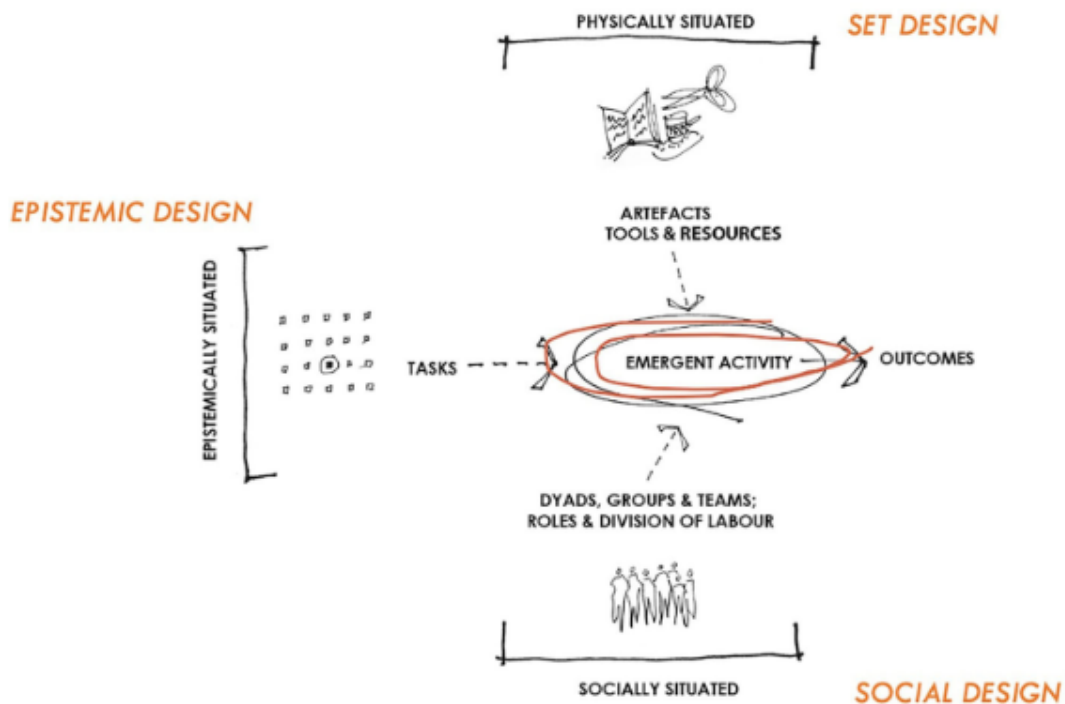


Fig. 1 ACAD framework (adapted from Goodyear and Carvalho 2014, p.59)

generated meeting reports showed that there were 90 students and 10 staff that attended either one or both VHH 1 and VHH 2. Participants included students enrolled in courses taught by the VHH facilitators and teaching staff who were directly involved with a cohort and/or who attended for the benefit of their own professional development. The VHH sessions were held on the week prior to resuming teaching, after a 4-week Covid-19 lockdown teaching pause. Students were in mixed situations, for example, some were enrolled in semester one courses that were yet to finish, and all were scheduled for courses that would be transitioned to online in the following semester. There was emergent need for staff and students to get familiar with new teaching and learning arrangements; however, participation was also dependent on their availability, under the extraordinary circumstances of the lockdown period, which were very different than what people usually experience during traditional academic breaks between semesters.

Design Structure

With Covid-19, the need to redesign courses happened as part of a public health emergency moment, which also had political, economic and social characters associated with its emergency nature (Williamson et al. 2020). Stress, uncertainty and anxiety were implicitly or explicitly present at first, bringing the affective nature in learning to the fore. Students and staff would have a variety of arrangements in their physical home settings, which could include having to deal with technical concerns (e.g. access to Internet and connectivity or having to negotiate access to a device with other family members), spatial arrangements (e.g. having a dedicated space for study sessions), family (e.g. having carer responsibilities) and physical and mental health stress (e.g. being part of the vulnerable at risk group or having anxiety about job related issues).

Considerations about these multiple dimensions connect well with existing practices within the Bachelor of Nursing programme, which incorporates a holistic view of learning. The Bachelor programme incorporates Te Whare Tapa Whā (Durie 1985), an Aotearoa New Zealand devised framework for health and wellness, which is foundational in planning and providing healthcare (see Fig. 2). Aspects of health and wellness are represented holistically as the Tapa Whā (four walls) of a Whare (house) and include Taha Whānau (family and relational), Taha Tinana (physical), Taha Hinengaro (emotional) and Taha Wairua (spiritual) wellbeing. Te Whare Tapa Whā foregrounds that the interrelationship between each of these dimensions supports holistic care.

Many of the tasks proposed in the nursing courses invite students to think about health holistically, for example, as students are asked to identify their own personal health and wellness in terms of Te Whare Tapa Whā. Thinking about their own wellbeing is important, so that they can empathize and consider the wellbeing of others. Students might consider their wellbeing holistically, for example, using a website Meke Meter¹. The Meke Meter is a wellbeing self-assessment tool which considers social, physical and mental aspects (Forrest et al. 2019). Our design for transition took these ideas into account—where the wellbeing of staff and students should be noted, particularly in this moment of stress and uncertainty.

Design decisions took multiple factors into account, such as considerations about the affective mood, but it was also important to find out the types of technical and spatial difficulties students and teachers might be having. Identifying and addressing these difficulties were a crucial part of the process, as our goal was to support their successful transition into the new learning environment, breaking down the complexity of some of the elements (tools, tasks and social arrangements). Concerns about the networked learning values were also present (Hodgson and McConnell 2019), and these involved figuring out ways of enabling and/or scaffolding participation and collaboration within the new learning environment.

Scholars in the learning sciences have explored the role of scaffolding in a range of complex learning situations (Davis and Miyake 2004). Kolodner et al. (2003) argue that special kinds of scaffolds can effectively prepare participants for collaborative practices in a community. The authors suggest a phased design for collaborative learning situations, where initially students are asked to collaborate to solve simple problems. Kolodner et al. (2003) argue that these problems should be representative of those they will encounter in the future, for example, by including some of the reasoning skills students will need later, when they interact with more complex content. By engaging in these activities (alongside discussions about students' reasoning), students are supported to understand the value of collaboration and are more likely to productively collaborate in future interactions.

In designing for transition, it was important to use a phased design structure, not only to scaffold collaborative activity (social design) but also to gradually expose students and staff to different set design elements. The initial VHH sessions purposefully focused on experiencing and learning how to navigate within the online platform,

¹ See <https://app.mckcmeter.co.nz/>. Accessed 1 August 2020.

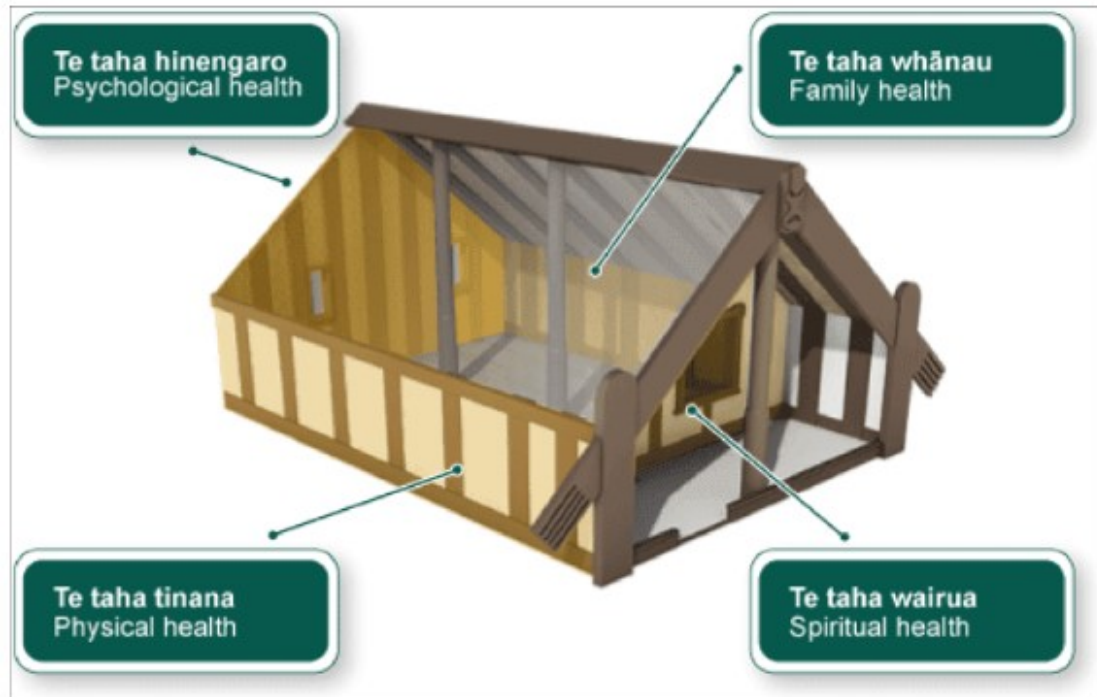


Fig. 2 Te Whare Tapa Whā (NZ Ministry of Health 2012)

without overwhelming participants. As such, phase 1 was necessary, for the successful implementation of the subsequent phases.

Table 1 illustrates the overarching three-movement framing in the setup of the design for transition.

Table 1 Design for transition—three movement framing

ACAD Framework	Phase 1—VHH prior to course	Phase 2—live course in lockdown (part A)	Phase 3—live course in lockdown (part B)
Set design	<ul style="list-style-type: none"> - Introduction of video conference platform - Introduction of specific features such as poll, whiteboard, chat, annotation tools - Overview of activities PDF 	<ul style="list-style-type: none"> - Video conferencing platform - Polls, text chat, annotation tools - Overview of activities PDF 	<ul style="list-style-type: none"> - Video conferencing platform - Poll, whiteboard, chat, annotation tools - Written course notes
Social design	<ul style="list-style-type: none"> - All participants experience online plenary room 	<ul style="list-style-type: none"> - Introduction of variation in social design - Online plenary & breakout rooms 	<ul style="list-style-type: none"> - Online plenary & breakout rooms
Epistemic design	<ul style="list-style-type: none"> - Low stakes task—happy hour games - Investigation of difficulties (access, technical, personal through anonymous poll) 	<ul style="list-style-type: none"> - Low stakes task—review of pre-learning formative quiz in groups and whole class - Live gathering of shareable data for discussion at interactive activities 	<ul style="list-style-type: none"> - Nursing course content - Case study - Conceptual frameworks for long-term health conditions

Phase 1—Fun Activities Prior to Online Course

A 1-hour VHH session was set up using a video conferencing platform (set design), for each of the year groups in the School of Nursing courses. The transition to the online environment used the established class cohorts to capture as many students and staff as possible (social design). Invitations to the virtual, bring your own beverage, ‘happy hour’ were sent through online posts and email via the courses’ websites. Our intention in naming the sessions as VHH was to allude to a moment where people could get together for a convivial, social encounter. Lecturers who joined in were able to survey the scene without any obligation to direct or manage the learning activity themselves. This allowed lecturers, as well as students, to experience the dynamics of the online classrooms in a no-risk and fun session (epistemic design). This ‘low stakes’ involvement of lecturers raised their interest and led to other requests; for example, the facilitators were asked to run other VHH sessions for post-graduate cohorts and to facilitate the initial online meeting sessions of various post-graduate and undergraduate courses.

At the start of each of these VHH informal events, polls (set design) were used to find out how participants were feeling and to ask about the reliability of their Internet connection. This offered an opportunity to bring everyone together as a group and to create a convivial online space (social design) whilst acknowledging the affective nature of the public health emergency we were all experiencing. The polls also provided valuable information about the availability of tools and technologies and any technical difficulties (set design). This was a crucial move to identify those who needed support in troubleshooting or those who had difficulties with potential access to the Internet and device availability. This information was then considered in preparation for, and expectations of, the rollout of the Bachelor of Nursing online courses in the subsequent week (phase 3).

New Zealand’s self-isolation lockdown occurred over the Easter holidays, a time when many people usually travel to visit family or holiday. The VHH ‘party games’ were created to encourage participation and interaction with different features in the video conferencing platform (set design). One of these involved the use of a ‘whiteboard’ and the host/facilitator sharing their screen and annotation tools to engage participants with the task of creating the ideal beach holiday scene. During the activity, the participants drew items deemed essential for a beach holiday, for example, sunshine, music, ice cream, boats and fishing, and the ubiquitous roll of toilet paper (see Fig. 3). Students were then invited to talk about their ‘essential’ holiday items, in an activity aimed at creating a convivial environment (social design) where participants could share humour at a time when anxiety was prevalent and, as such, addressing the affective nature of learning. The activity created rapport between facilitators and participants, and opportunities to showcase and experience using annotation tools (set design), and what is possible to do with those elements in the online classroom.

Other elements were further scaffolded with the introduction of a PollEverywhere quiz (set design) in which participants were asked to link famous movie lines to movie titles. The quiz activity enabled consensus creation through ‘upvoting’ on what was considered a ‘low stakes’ task (epistemic design). In that way, participants experienced interacting with elements of the platform (set design) but without having to worry about disciplinary knowledge.

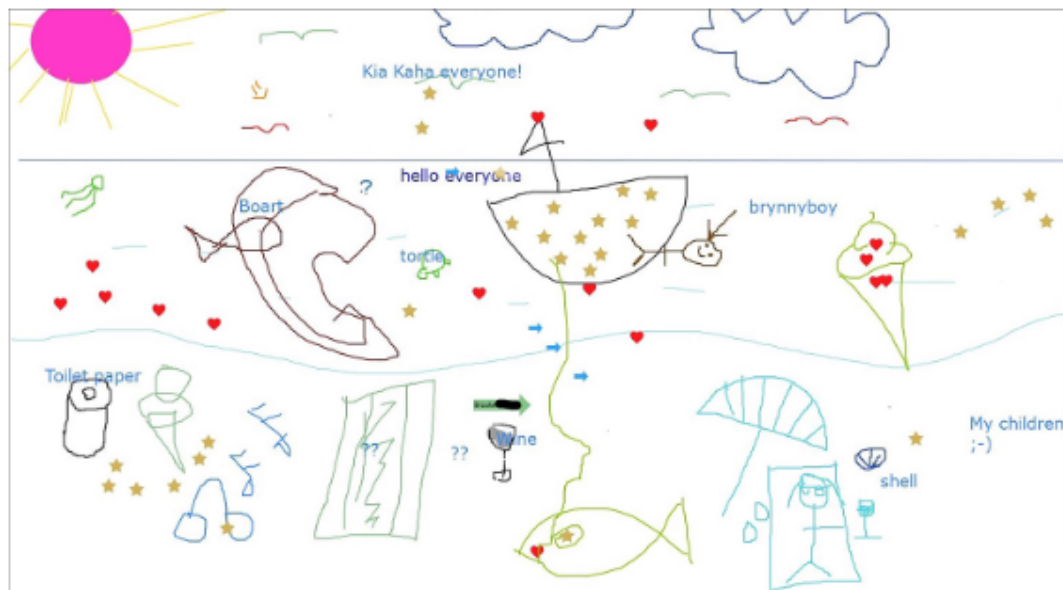


Fig. 3 Virtual happy hour—beach holiday essentials on shared whiteboard

Designing for transition during emergency remote education involved figuring out how to best support staff and students transition to the online format in a situation where there was minimal time for formal training, as many staff were focused solely on transferring their face-to-face course content to the online space. The VHH was therefore a crucial phase in designing for transition. At the end of the VHH, students seemed highly engaged, and the proposed tasks created learning moments for them to experience the use of the platform and to interact with each other. Staff observed different ways of facilitating an online session whilst experiencing themselves the use of different features of the platform. Importantly, both staff and students had an enjoyable social time.

Phase 2—Introducing Variations in Social Design: Live Course in Lockdown

The second event happened 4 days after the VHH session was held. The intent in this first live learning session (part A) was to break down complexity by creating opportunities for participants to experience variations in social design. Part A introduced work in small online groups (social design) through breakout rooms (set design). Breakout rooms are a feature of the video conferencing platform, which splits the large group into smaller groups, and a facilitator can either automatically or manually allocate people into groups. A shift into breakout rooms has the potential to be a harrowing participant experience if not managed well. It is essential to provide clear direction, both written and spoken, prior to moving participants into breakout rooms, so that activities and expectations are understood by all and therefore able to be achieved. Once in the breakout rooms, each with 3–4 participants, a low stakes task was proposed (epistemic design), which involved participants introducing themselves and discovering whose birthday was closest to that day's date, with that person becoming the leader for subsequent group activity. These tasks were based on teaching engagement strategies that students would experience in their course activities in the upcoming months (e.g. working in groups, assuming different roles within a group and participating in quizzes) and involved students using elements of the platform (set design)

that would be used in the phase 3 teaching, when the courses in the Bachelor of Nursing programme were live.

A core concern in this design for transition was to support lecturers and students to cope with their experiences of emergency remote education. The phased design gradually introduced new elements, which were carefully sequenced and paced (epistemic design) to not overwhelm participants in a moment of stress. The phased design also provided opportunities for staff to troubleshoot technology issues either in session or post-session. Jowsey et al. (2020) highlight that students expect teaching staff to be able to resolve technology issues in a timely way. These issues ranged from guiding students in how to find the invitation to their breakout room, facilitators joining breakout rooms to assist with finding and using annotation tools, to identifying whether students' Internet bandwidth required them to reconnect to the meeting platform and then be re-allocated into their breakout room. These sessions also helped to identify students who required assistance with hardware or software downloads and enabled us to connect them with university support staff. These initial low stakes sessions empowered staff and students to work together and to create solutions which were presented in text, audio and video in subsequent sessions. In addition, solutions to frequently raised issues were used to refine the planning for the online sessions in phase 3 and contributed to a 'run-sheet' template that was distributed to all teaching staff.

Although the design of tasks (epistemic design) in phase 2 was considered low stakes, as they involved formative assessment of nursing knowledge, careful instructions to support participants' engagement were essential (Jowsey et al. 2020). This experience informed the design of a PDF used in phase 3, when prior to the live meeting, an overview of what was planned for the session was shared with students and teachers—including screen capture of various elements of the video conferencing platform. The aim was to assist those who were unfamiliar with the features of the platform to find their way, particularly those who might have been using limited screen space or participating via smartphones or tablets (set design).

In phase 2, however, a presentation software was used to share the overview of activities, and participant's engagement was invited via the use of text-based chat and verbal instructions during this session, to guide participants in finding and using the shared screen and annotation tools in the video conferencing platform (set design). We realized that an overview PDF (set design) would provide extra support for students in terms of the organization of tasks (epistemic design), types of social engagement (social design), timings to navigate the tasks and clarity on facilitation roles during the session.

In creating the VHH and phase 2 design for transition, we were acutely aware that learning tasks should provide opportunities for students to experience a sense of belonging, to feel connected to others (social design), to engage within the online environment. Meyer and Allen (1991) refer to the three-component commitment theory, suggesting that people engage and perform better when cognitive, normative and affective aspects are all present in an enterprise. And so, the aim was to emphasize each of these within the online learning environment and in doing so to create a robust learning experience. We argue that the phased approach supported students in experiencing the use of different features on the online meeting platform (set design), as cognitive and normative aspects were introduced seamlessly (Meyer et al. 2002). Such scaffolding supported participants' experience of technology-enhanced learning (Green and Huntington 2017) and provided an important foundational experience for phase 3. Phase 1

and 2 enabled students and teaching staff to become familiar with the environment in which they would be teaching and learning for the remainder of the semester.

Phase 3—Building on Experiential Foundation: Live Course in Lockdown

The implementation of VHH enabled teaching staff to consider possibilities for their own online learning sessions. As such, it was also a learning experience for academics who were unfamiliar with online teaching and learning. Jowsey et al. (2020) argue that staff needs to learn how to teach in online environments in order to support quality, technology-enhanced teaching and learning experiences for their students. The experiences of staff and students in the VHH and phase 2 sessions led to the provision of staff-only tutorials, where the breadth of the functionality of the video conferencing platform could be further demonstrated and explored.

It also led to the development and refinement of design artefacts to help teachers and facilitators, such as the creation of an online session run-sheet template. This document aimed at facilitating the planning and revision of a lesson's content—in terms of the elements that can support students' transition of face-to-face classroom activity to the virtual learning meeting space. As a design artefact, the run-sheet template also evolved, to accommodate what the facilitators learned in phase 1 and 2. The run-sheet was modified to include visual icons that enhanced instructional text—for example, an image of a timer to prompt the online facilitating teacher to start a timer for breakout room sessions. These elements offer visual cues, helping facilitators and learners to quickly identify what is next at learn-time.

Relationships between academic staff also evolved. Team teaching and peer review for facilitation roles became more salient after the three phases, leading to collaborative teaching and students' engagement and rich participation in online environments. Throughout this process, the Nursing staff and students have become increasingly familiar and comfortable with the tools (epistemic design) and the types of social arrangements (social design), thereby reducing apprehension and uncertainty going forward. This meant that when the nursing online course began, there was less concern about the features of the platform (set design) and a more natural focus on the online tasks and disciplinary content (epistemic design). Innovative ideas proliferated with academic staff trying out different online pedagogical strategies and sharing their learning with others. Feedback from the students mentions that learning experiences have been 'fun' and socially engaging.

Abstracting Overarching Principles for Designing for Transition

Moving to online teaching and learning, particularly within the context of emergency, can be a scary and lonely experience to both students and teaching staff, a moment that is surrounded by anxiety (Hodges et al. 2020). From the perspective of academic staff, learning how to teach and manage the online space is perhaps best achieved through a team teaching approach where a more experienced facilitator supports the less experienced peer, until they feel confident and competent. From a students' perspective, supporting learners' activity in this new environment through careful scaffolding is essential—for example, as students learn how to manipulate new tools and

accommodate new social configurations, which, in turn, are influential for productive learning in any given disciplinary field.

Designing for transition evolved within a continuum, in a three-phased approach. The overarching design considered ideas from Dalsgaard and Godsk (2007), who took existing lecture materials and identified essential content within the lecture concepts, adapting it to provide on-demand learning content that supported repetition and flexibility whilst catering for individual student preferences. When Dalsgaard's team first tried to combine all of the content into a single, online lecture experience, students became frustrated at the increased speed and experienced this as a difficult learning situation (Dalsgaard and Godsk 2007). Their strategy was to identify first the 'problems' or questions within the existing material that could be developed into engagement activities, as opposed to the traditional lecture room open discussions, or depending on a response from a single student. The design for transition drew on these ideas to specifically offer support for teaching staff. There was an emphasis on demonstrating how existing lecture materials from traditional lecture halls could be translated and adapted, in content that would encourage more participatory engagement whilst capitalizing on networked learning—or on the use of technology to promote connections, participation and shared understandings (Goodyear et al. 2004; Hodgson and McConnell 2019). We achieved this through offering hands on experiences to staff where they could see how students were guided within the online meeting space, in breakout room discussions, and paired with PollEverywhere polls, as an active means to support whole class participation in problem-solving scenarios. Prior to these events, there was no formal community of practice in relation to teaching at the School of Nursing, but the process of sharing experiences during the transition facilitated staff to come together as a community to discuss new pedagogical practices and saw staff within the School of Nursing moving towards becoming a community of practice (Wenger 1998).

When well designed and carefully scaffolded, online teaching and learning has the capacity to provide socially rich learning experiences. Learning experiences that emphasize online participation will always be different from what one experiences at face-to-face learning sessions at the university learning spaces, but the quality of these interactions is not necessarily inferior. In order to foster an online learning community, it is necessary to carefully consider elements as part of a design assemblage (tools, tasks, social arrangements) that might allow for student dialogue, and create a convivial atmosphere likely to enhance the quality of teacher-student interactions, which are all key aspects of well-functioning learning networks (Goodyear et al. 2004; Kenzig 2015; Swan et al. 2009).

Another important consideration in our design for transition was linked to the affective dimension, on how to support teachers and students to cope with emergency remote education. As such, the VHH sessions incorporated elements to address the health and wellbeing of our students and teachers in this rapid shift to the online mode, for example, creating opportunities where participants could share their experiences with one another, where they could discuss difficulties openly and have a space to support each other.

In what follows, we summarize core general principles for those designing for transition in the context of remote emergency education:

- (1) Plan for a phased design that gradually introduces elements of set, social and epistemic design.

- (2) Keep it simple to avoid overwhelming learners, include only a few elements at a time.
- (3) Start with a ‘low stakes’ learning task, with an element of fun—it helps with the affective mood as well as with focus on learning about new elements rather than disciplinary knowledge content.
- (4) Work on conviviality and inclusion with tasks that allow multiple voices to be heard.
- (5) Bring the affective to the fore, offering safe opportunities to discuss issues (including anonymously) and use these as the basis for jointly exploring potential solutions.
- (6) Offer printable resources for those with low connectivity or using small devices.
- (7) Use visual cues, for learners and educators, to signal movement between learning spaces, e.g. the use of icons in a PDF to indicate a task and where it will take place—breakouts, plenary, and polling site.
- (8) Privilege tasks and resources that require low bandwidth.
- (9) Whenever possible, embrace team teaching—it allows for novice-apprentice exchanges.
- (10) Organize staff discussions about their experiences—it allows for learning new pedagogical strategies and ways to tackle problems, and builds a sense of a community.

Conclusion

The global pandemic affected the structuring of teaching and learning practices in the Bachelor of Nursing, not only with the sudden requirement that students engage with lecturers remotely via the use of technology. In some cases, this moment highlighted digital inequality in access, connectivity, and literacy amidst anxiety for the unknown. But the moment also offered an opportunity for academic staff to discuss and learn different ways of teaching, ways of promoting student engagement and collaborative work through team teaching—which were all facilitated by the exchanging of teaching experiences and ideas amongst Nursing academic staff.

Currently, the Nursing School is encouraging teaching staff to capture and share their design ideas. This seemingly onerous task involves taking existing lecture resources and working out how to translate them into interactive online strategies, based on pedagogical principles that encourage active and collaborative learning. In mapping this process, we are bringing together teams of teachers to jointly develop pedagogical strategies that are socially engaging, pleasurable and productive. Whilst a sudden move to a digital teaching experience can be mentally taxing, there is much to be gained from working with others in a team teaching collaborative environment, for both students and teachers. This has been a moment to ponder and to act, to come together as a learning community and to consider what can be our contribution to those around us and, further afield, to others going forward into the future and to those who may experience a sudden transition and the need to quickly reconfigure courses, as we have been experiencing with Covid-19. As Jandrić (2020: 237) reminds us, ‘knowledge and solidarity are the key to long-term survival and flourishing of the human race’.

Code Availability Not applicable.

Authors' Contributions All authors contributed equally to the development of this manuscript. All authors read and approved the final manuscript. Data Availability Not applicable.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

References

- Bectham, H., & Sharpe, R. (2019). *Rethinking pedagogy for a digital age*. New York: Routledge.
- Carvalho, L., & Goodyear, P. (2019). Productive learning networks. In M. Peters (Ed.), *Encyclopaedia of teacher education*. Singapore: Springer. https://doi.org/10.1007/978-981-13-1179-6_106-1.
- Carvalho, L., Goodyear, P., & de Laat, M. (2017). *Place-based spaces for networked learning*. New York: Routledge. <https://doi.org/10.4324/9781315724485>.
- Carvalho, L., & Ycoman, P. (2018). Framing learning entanglement in innovative learning spaces: Connecting theory, design and practice. *British Educational Research Journal*, 44(6), 1120–1137. <https://doi.org/10.1002/berj.3483>.
- Carvalho, L., & Ycoman, P. (2019). Connecting the dots: Theorizing and mapping learning entanglement through archaeology and design. *British Journal of Educational Technology*, 50(3), 1104–1117. <https://doi.org/10.1111/bjct.12761>.
- Czerniewicz, L. (2018). Inequality as higher education goes online. In N. B. Dohn, S. Cranmer, J. Sims, M. De Laat, & T. Ryberg (Eds.), *Networked Learning Research in Networked Learning*. Cham: Springer. https://doi.org/10.1007/978-3-319-74857-3_6.
- Dalsgaard, C., & Godsk, M. (2007). Transforming traditional lectures into problem-based blended learning: Challenges and experiences. *Open Learning: The Journal of Open, Distance and e-Learning*, 22(1), 29–42. <https://doi.org/10.1080/02680510601100143>.
- Davis, E., & Miyake, N. (2004). Explorations of scaffolding in complex classroom systems. *The Journal of the Learning Sciences*, 13(3), 265–272. https://doi.org/10.1207/s15327809jls1303_1.
- Duric, M. H. (1985). A Maori perspective of health. *Social Science & Medicine*, 20(5), 483–486. [https://doi.org/10.1016/0277-9536\(85\)90363-6](https://doi.org/10.1016/0277-9536(85)90363-6).
- Fawns, T. (2019). Postdigital education in design and practice. *Postdigital Science and Education*, 1(1):132–145. <https://doi.org/10.1007/s42438-018-0021-8>.
- Fawns, T., Aitken, G., & Jones, D. (2019). Online learning as embodied, socially meaningful experience. *Postdigital Science and Education*, 1(2), 293–297. <https://doi.org/10.1007/s42438-019-00048-9>.
- Forrest, R. H., Lander, P. J., Wawatai-Aldrich, N., & Pearson, M. (2019). Patu™ Mcke meter: Use in the classroom. *New Zealand Journal of Educational Studies*, 54, 327–344. <https://doi.org/10.1007/s40841-019-00145-0>.
- Goodyear, P., Banks, S., Hodgson, V., & McConnell, D. (Eds.). (2004). *Advances in research on networked learning*. Dordrecht: Kluwer Academic Publishers.
- Goodyear, P., & Carvalho, L. (2014). Framing the analysis of learning network architectures. In L. Carvalho & P. Goodyear (Eds.), *The architecture of productive learning networks* (pp. 48–70). New York: Routledge.
- Goodyear, P., & Dimitriadis, Y. (2013). In medias res: Reframing design for learning. *Research in Learning Technology*, 21, 1–13. <https://doi.org/10.3402/rlt.v21i0.19909>.
- Gourlay, L., & Oliver, M. (2018). *Student engagement in the digital university: Sociomaterial assemblages*. New York: Routledge.
- Green, J. K., & Huntington, A. D. (2017). Online professional development for digitally differentiated nurses: An action research perspective. *Nurse Education in Practice*, 22, 55–62. <https://doi.org/10.1016/j.nepr.2016.11.009>.
- Hodges, C., Moore, S., Locke, B., Trust, T., & Bond, A. (2020). *The difference between emergency remote teaching and online learning*. EDUCAUSE Review. <https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning>. Accessed 1 Aug 2020.
- Hodgson, V., & McConnell, D. (2019). Networked learning and postdigital education. *Postdigital Science and Education*, 1(1), 43–64. <https://doi.org/10.1007/s42438-018-0029-0>.
- Hodgson, V., McConnell, D., & Dirckinck-Holmfeld, L. (2012). The theory, practice and pedagogy of networked learning. In L. Dirckinck-Holmfeld, V. Hodgson, and D. McConnell (Eds.), *Exploring the theory, pedagogy and practice of networked learning* (pp. 291–305). New York: Springer. https://doi.org/10.1007/978-1-4614-0496-5_17.

- Hodgson, V., de Laat, M., McConnell, D., & Ryberg, T. (Eds.). (2014). *The design, experience and practice of networked learning*. New York: Springer.
- Jandrić, P. (2017). *Learning in the age of digital reason*. Rotterdam: Sense.
- Jandrić, P. (2020). Postdigital research in the time of Covid-19. *Postdigital Science and Education*, 2(2), 233–238. <https://doi.org/10.1007/s42438-020-00113-8>.
- Jandrić, P., & Boras, D. (2015). *Critical learning in digital networks*. Switzerland: Springer.
- Jandrić, P., Knox, J., Besley, T., Ryberg, T., Suoranta, J., & Hayes, S. (2018). Postdigital science and education. *Educational Philosophy and Theory*, 50(10), 893–899. <https://doi.org/10.1080/00131857.2018.1454000>.
- Jones, C. (2015). *Networked learning: An educational paradigm for the age of digital networks*. Switzerland: Springer International Publishing.
- Jowsky, T., Foster, G., Cooper-Iochu, P., & Jacobs, S. (2020). Blended learning via distance in pre-registration nursing education: A scoping review. *Nurse Education in Practice*, 44, 102775. <https://doi.org/10.1016/j.nepr.2020.102775>.
- Kenzig, M. J. (2015). Lost in translation: Adapting a face-to-face course into an online learning experience. *Health Promotion Practice*, 16(5), 625–628. <https://doi.org/10.1177/152483991558829>.
- Kolodner, J., Camp, P., Crismond, D., Fasse, B., Gray, J., Holbrook, J., Puntambekar, S., & Ryan, M. (2003). Problem-based learning meets case-based reasoning in the middle school science classroom: Putting learning by design into practice. *The Journal of the Learning Sciences*, 12(4), 495–548. https://doi.org/10.1207/S15327809JLS1204_2.
- Meyer, J. P., & Allen, N. J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61–89.
- Meyer, J. P., Stanley, D. J., Herscovitch, L., & Topolnytsky, L. (2002). Affective, continuance, and normative commitment to the organization: A meta-analysis of antecedents, correlates, and consequences. *Journal of Vocational Behavior*, 61(1), 20–52. <https://doi.org/10.1006/jvbc.2001.1842>.
- Munoz, J. A., Hernandez, D., Carvalho, L., Thompson, K., Wardak, D., Martinez-Maldonado, R., & Goodyear, P. (2018). 4FAD: A framework for mapping the evolution of artefacts in the learning design process. *Australasian Journal of Educational Technology*, 34(2), 16–34. <https://doi.org/10.14742/ajet.3706>.
- Ryberg, T., & Sinclair, C. (2016). The relationships between policy, boundaries and research in networked learning. In T. Ryberg, C. Sinclair, S. Bayne, & M. de Laat (Eds.), *Research, boundaries, and policy in networked learning* (pp. 1–20). Cham: Springer. https://doi.org/10.1007/978-3-319-31130-2_1.
- Swan, K., Garrison, D. R., & Richardson, J. C. (2009). A constructivist approach to online learning: The Community of Inquiry framework. In C. R. Payne (Ed.), *Information Technology and Constructivism in Higher Education: Progressive Learning Frameworks* (pp. 43–57). IGI Global. <https://doi.org/10.4018/978-1-60566-654-9>.
- Williamson, B., Eynon, R., & Potter, J. (2020). Pandemic politics, pedagogics and practices: Digital technologies and distance education during the coronavirus emergency. *Learning, Media and Technology*, 45(2), 107–114. <https://doi.org/10.1080/17439884.2020.1761641>
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge: Cambridge University Press.

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Appendix 13 Publication – Green et al. (2023)

Statement of Contribution



GRADUATE
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STATEMENT OF CONTRIBUTION DOCTORATE WITH PUBLICATIONS/MANUSCRIPTS

We, the student and the student's main supervisor, certify that all co-authors have consented to their work being included in the thesis and they have accepted the student's contribution as indicated below in the Statement of Originality.			
Student name:	Jennifer Kay Green		
Name and title of main supervisor:	Associate Professor Lucila Carvalho		
In which chapter is the manuscript/published work?	Chapter 7		
Describe the contribution that the student and members of the supervisory team have made to the manuscript/published work: ¹ CRediT: Conceptualisation: JKG; Cultural advisor Dr P Ruwhiu; Data curation: JKG; Formal analysis: JKG; Investigation: JKG; Methodology: JKG; Supervision: LC, NS; Validation: JKG, PR, LC, NS; Writing - Original Draft: JKG; Writing - Review & editing JKG, LC, NS, PR.			
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<input type="radio"/>	<p>The manuscript is currently under review for publication</p> <p>Please provide the name of the journal:</p>		
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