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Transforming teaching through cooperative inquiry: meaningful research for university teachers

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ABSTRACT

In this article, seven participants from nursing, social work, accounting, fine arts, bioscience, and learning support disciplines share insights gained through participation in a transdisciplinary cooperative inquiry research group aimed at developing excellence in teaching. This Cooperative Inquiry for Reflection and Collaboration on Learning Effectiveness (CIRCLE) group promoted transformation of individual participants' teaching as well as development of inter-departmental collaboration and camaraderie within the context of contemporary, performance-based academic environments. Collaborative, pedagogical, action research was undertaken through cooperative inquiry (CI) to explore transformative learning activities that increased teachers' and students' engagement while covering prescribed learning outcomes using creative approaches. The results are presented in a reflexive, collaborative autoethnography through seven authentic teacher stories. Reflections on the process and the impact of being in the research group provide evidence of the potential transdisciplinary, CI research groups offer to enhance research and teaching outcomes in higher education. These findings are significant internationally in light of the necessity to meet the increasing expectations of all stakeholders in the global tertiary education sector.

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transdisciplinarity

Introduction

Teachers engage in tertiary education predominantly for the love of the subject and the ambition to expand knowledge and engage in pedagogical transformation that enhances students' experience. Nevertheless, tertiary education worldwide is driven by political, social, and economic expectations of responding to needs such as changing technologies and growing economies. This paper aims to show how cooperative inquiry (CI) (Heron and Reason 2006) providing peer-critiqued validation of collaborative, autoethnographic (CAE) pedagogical action research (PedAR) (Arnold and Norton 2021) projects can meet

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the challenge of developing rich, diverse, innovative teaching practices that enhance student engagement, whilst meeting the imperatives of working within a performance-based, research-driven academic environment. The seven participants, all experienced academics, engaged in the design, aims and decisions about the methodology, content, and process of this research.

Background

Corporatisation of higher education

Different sources fund a high level of expenditure in the global tertiary sector. For example, New Zealand universities receive 49% of their income from the New Zealand government (Universities NZ 2018). In many universities, students, domestic and international, as an investment in their future, contribute significant income through fees. Additionally, benefactor donations, endowments and industry-funded collaborations provide income to universities worldwide. These stakeholders expect tertiary educators to provide high-quality learning experiences that produce satisfactory returns on investment. This reflects an increasingly neoliberal context often focused on tangible financial returns (Dougherty and Natow 2020) because of 'the marketisation that has intensified in higher education in recent years' (Serrano et al. 2018, 11).

The New Zealand tertiary education sector is an example of the direct, beneficial effect on the local economy and a significant, positive impact on workforce productivity thus increasing GDP (2018; Universities NZ: Te Pōkai Tara 2016). People with a university education have higher prospects of employment and positive impacts on the economy but, in some countries, concerns remain about low productivity (Radloff 2011). Napan et al. (2018) cited numerous authors supporting their perceptions of a declining relevance of research and teaching about complex, real-world problems as well as a prevailing 'silo mentality' dissuading transdisciplinary research as a cause of this low productivity and argued for transformative pedagogy in the current tertiary environment.

The financial survival of a university depends on staff productivity attracting funding from student fees, grants, and government. This carries a risk of the university moving from a corporate-collegial culture to a more corporate-mercantile culture (Sanderson and Watters 2006). Emphasis on the latter can mean resources and work priorities shift from teaching and learning toward research and publications in high-impact journals to attract non-government and government funding. This leaves less time and institutional recognition for transforming teaching practices that engage students and enable them to meet the challenges of a complex world.

Performance-based funding in contemporary universities

Higher education institutions in many countries compete for more funding from relatively small public and private purses (Carbone et al. 2019). Performance-based research funding models often determine tertiary institution funding levels from the central government and private sources in many countries (Dougherty and Natow 2020; Ortagus et al. 2023; Teixeira, Biscaia, and Rocha 2022). Research-active academics record their research activities for assessment of research outputs, peer esteem, and contributions to the

research environment. This funding model can be empowering by facilitating time for high-quality research and motivation to aspirational and professional goals. However, it can devalue pedagogical activities that develop engaged, successful undergraduate students but not recognized for funding, and marginalize institutions deemed insufficiently research active (Harland and Wald 2018; Ortagus et al. 2023). This presents a challenge of navigating the prevailing tertiary environment through transformative pedagogies.

Student engagement

Improving engagement and retention of students is a critical element in tertiary pedagogy (Yoon, Kim, and Kang 2018). For example, New Zealand has high participation rates for adult learning, 48% compared to the OECD average of 39% (Ministry of Education 2016), and high completion rates in bachelor's degrees of approximately 74% for those studying full-time (Ministry of Education 2017). However, completion rates are lower (33%) for part-time and Māori and Pasifika students (Radloff 2011).¹

The imperative to increase student engagement through transformative pedagogy is highlighted in a large multi-institution survey of student engagement in their first year of study indicating New Zealand university students were less engaged than their North American peers. Only 18.4% of on-campus students spent over 16 hours per week in class and one-third of all students spent under five hours per week in preparation for study (Radloff 2011). Zepke and Leach's (2010) proposals for improving student engagement through transformative pedagogy included improving student self-belief, enhancing motivation and agency, creating educational experiences that are challenging and enriching, and adapting to students' expectations.

Enhancing student engagement can improve the quality of education and increase student success in universities. Bowden, Tickle, and Naumann (2021) identified affective and behavioural student engagement as more influential on student outcomes than social and cognitive engagement. Reeve (2013) emphasised student agentic engagement in course learning goals, design, content, delivery, and assessment. Yoon, Kim, and Kang (2018, 2) concluded that 'behavioural, emotional, cognitive, and agentic participation' are core elements of student engagement.

Our pedagogically transformative activities sought to enhance our involvement with students to meet their needs better and cultivate greater student engagement with the learning process and environment. Hora and Smolarek (2018) highlighted the importance of tertiary educators critiquing their pedagogical practices and assumptions behind their teaching and learning approaches. Kane, Sandretto, and Heath (2004) discovered excellent teachers use purposeful reflection on their practice to integrate cognitive, behavioural, social, and personal aspects in their teaching. In our project, the creation of knowledge through collaborative action research (CAR; Savoie-Zajc and Descamps-Bednarz 2007) enabled participants to be creative, yet also attend to academic standards established by the University while engaging in relevant pedagogical action research (PedAR) (Arnold and Norton 2021).

Innovative teaching practice

Developing innovations in teaching practice is challenging, particularly in a siloed, increasingly corporatised university environment. Informal sharing, collaborative reflection meetings, communities of practice, and teaching circles are approaches used to support academics in their teaching practice (Blackwell, Channell, and Williams 2001). These are often conducted as a time-limited, volunteer, extracurricular activities within subject-area silos which may limit the richness of ideas and critical feedback amongst group members. Therefore, we formed a transdisciplinary, Cooperative Inquiry for Reflection and Collaboration on Learning Effectiveness (CIRCLE) group. In Napan et al. (2018), the authors reported a CI approach was effective for adding a collaborative element to critical self-reflection in the process of developing new, individual teaching practices. This article uses the meta-reflection in that study on pedagogical issues and problems in the current tertiary environment (Napan et al. 2018) and explores more deeply the experience of each author. It reports how each collaborator developed idiosyncratic ways to implement innovative teaching practices in their subject area using reflexive, collaborative autoethnography (RCAE; Gates et al. 2022) to reflect on how transformative pedagogy influenced teacher-student engagement.

Our article contributes to the literature by showing the effectiveness of transdisciplinary CI as a research method, professional development tool, and a cultivator of transformational pedagogy through support and challenge from peers. It shows how this facilitates collaborative, pedagogical, action research and promotes rich relationships and research outputs simultaneously meeting the imperatives of performance-based academic institutions. It presents educators with a variety of innovative teaching activities.

Research framework

Cooperative inquiry method

CI is a deeply personal and reflexive action research method focusing on groups of people transforming themselves or their engagement with the world through cycles of action and reflection. Through CI, people with similar concerns about a shared experience can make sense of their world, develop creative perspectives, and learn ways of changing paradigms and doing things better (Heron and Reason 2006). Development of trust, passion for teaching, and continuity of involvement enabled participants to explore their transformative pedagogical experiences through the lens of an extended epistemology of experiential knowing that transcends the focus on solely cognitive knowing prevalent within academia (Coghlan and Brydon-Miller 2014; Heron and Reason 2006).

We used CI as a catalyst for a CAR researcher/educator initiative in which seven CIRCLE members were researcher-teachers and one was a non-teacher researcher (Bruce, Flynn, and Stagg-Peterson 2011). We used CI to engage in CAR cycles of motivation, knowledge, action, and reflection (Bleicher 2014) to catalyse pedagogical transformation through a PedAR methodology. Thus, CI created the space for engaging in collaborative, pedagogical action research using a RCAE process.

Autoethnographic approach

The self-reflective exploration of our personal experiences in the shared social experience of tertiary academia followed a RCAE research approach. Interactions in CIRCLE meetings and online facilitated a reflexive and systematic analysis of our individual and shared experiences of transformative pedagogy (Gates et al. 2022). Each researcher used their experience as the locus of the research (Adams, Ellis, and Jones 2017) and shared reflections on their experience in CIRCLE to facilitate constructive feedback. In an autoethnographic approach, ‘personal experience ... [is] an important source of knowledge in and of itself, as well as a source of insight’ (Ellis and Adams 2014, 254). Taking an RCAE approach nurtures alternative understandings of dominant, accepted views of the phenomena being investigated and provides emic knowledge of a social experience (Adams, Ellis, and Jones 2017; Ellis and Adams 2014).

Research questions

The monthly CIRCLE meetings germinated conversations on learning approaches regarded as non-traditional in courses in our disciplines of social work, accounting, nursing, fine arts, and bioscience (Napan et al. 2018). Following Serrano et al. (2018), we explored various approaches and encouraged and challenged each other to select and attempt a non-traditional learning approach relevant to our discipline. Stories of attempts to implement these approaches were shared in conversations in the monthly CIRCLE meetings. Minutes of these meetings were shared and reviewed by members; individual project documents were stored in an online folder for review and comment from CIRCLE members; and, in between meetings, conversations continued through group and individual emails and annotations on shared documents. In this way, data was collected from cycles of action and reflection from this group of seven, tertiary educators from different academic disciplines in monthly meetings held over 18 months.

We developed a meta-inquiry with the following research questions (RQ) in three areas of academic endeavour:

Transformative teaching practice

RQ1: Can reflection on changes made through CI to learning environments in our individual projects contribute to transformations in our teaching practice?

RQ2: What effect does CI have on the development and utilisation of these teaching practices?

Student experience

RQ3: What impact do these transformations in teaching practice have on student experience and outcomes?

Teacher experience

RQ4: Is a transdisciplinary inquiry group in a performance-based research environment effective in catalysing pedagogical transformation?

RQ5: Do fun and engagement in monthly meetings and supporting one another in our creative endeavours expand our research creativity and contribute to survival in neoliberal academia?

Method

We used CI to generate, collect, and analyse data (Napan et al. 2018) using the CAR cycle in a RCAE research approach. Each researcher implemented a previously unused learning delivery approach, recorded their reflections, collected student responses through course feedback, and shared their reflections in the monthly CIRCLE meetings. The individual projects that produced the content for analysis (see [Appendix 1](#)) were varied in their discipline area, course context, and learning delivery approach. For 18 months, each participant developed their teaching through action and reflection processes.

Ethics for the project was managed under a low-risk ethics approval from the ethics committee of the university which hosted the group meetings. Students were not direct subjects of the research and anonymity was maintained in the reports. Staff accepted they might be identified despite best efforts to maintain anonymity. All transformational activities met the prescribed learning outcomes, criteria, and course delivery assurances in the course guides. Furthermore, all aspects of the project were checked for compliance with avowed institutional goals by presenting challenges to the status quo in constructive, appreciative ways. Ethicality was constantly monitored by the independent, non-teacher researcher in the CIRCLE group to ensure compliance with the low-risk ethics approval.

Individual projects

Researchers had freedom to report and reflect on their experiences and learning from developing individual, teaching/learning strategy projects within CIRCLE but we organised our responses under the same framework. The data is summarised in [Appendix 1](#). Intentions and aims set the scene for transformative interventions. Transformative activity included actions taken, approaches to engagement developed, and learning activities created. Each participant's findings and discussion of their data are presented below. The section on outcomes and reflections reports the results while the final section presents each researcher's reflection on the impact of CIRCLE in facilitating a CAR framework to enable a RCAE approach to analysing the outcomes observed and the experience of engaging in PedAR on a transformative teaching and learning initiative.

Intentions, aims, and activities

Each participant reflected individually and with CIRCLE colleagues on the current state of an aspect of their teaching practice and created intentions for transforming this aspect. These are reported in [Appendix 1](#) under ‘Intentions and aims.’ The participants shared in CIRCLE learning activities they could develop and worked collaboratively to identify which activities were appropriate for each of them to achieve their goals. The ‘Transformative activities’ column in [Appendix 1](#) summarises the activities discussed in the CI group and implemented by each participant that were the data for individual and collaborative reflection in the CI group. Reading the table horizontally provides a narrative that links intentions with activities. Reading the table vertically provides an overview of the intentions and transformative activities readers might consider for the improvement of their practice.

The following section sub-headings indicate the focus of each participant (more fully described in [Appendix 1](#)), and the Outcomes sections highlight the impact of the transformative activities implemented (more fully explained in [Appendix 1](#)). The Reflections sections express participants’ perceptions of the cooperative enquiry group’s impact on engaging in PedAR through CAR using RCAE to enhance their teaching and research.

Outcomes and reflections

Outcomes reported here are based on participant self-reflection, critical feedback from CIRCLE members, and observations and reflections on generic course feedback from students.

Participant 1: expanding student creativity within a compulsory prescriptive course

Outcomes

Student motivation increased through personalising learning outcomes according to their interests and aspirations and creating assignments in line with their learning styles, strengths, and abilities. Engagement improved, and students committed to larger projects than required by the course outline. Collaborative and creative assignments took them out of their comfort zone and expanded their collaboration styles. Students put more effort into assignment completion than previously under traditional course delivery.

Learning contracts and self- and peer-assessment transformed the overall level of achievement, joy in undertaking the learning activities, and engagement with the learning outcomes. Students reported learning a lot from peers assessing their work and their colleagues’ reflection on their work, realising there is a range of ways to address the same learning outcomes. Competition was replaced with collaboration, resentment with curiosity.

Reflections

I have learned to trust my intuition, release control, and create a context where students feel empowered and fully engaged with the content and process of the course by choosing the format and topic of their assignments. I developed strategies to welcome

surprises and unexpected learnings in my classroom and utilise these for learning. I have heard a lot of 'I never thought about it that way' comments. I believe the fear of being assessed was eliminated, enabling students to do their best. CIRCLE provided a unique space for me to reflect, tweak teaching strategies, and find ways to evaluate Academic Co-Creative Inquiry (Napan 2017), a teaching method I was using. The group enabled me to expand and critique my ideas and offered unconditional and understanding support for engaging in collaborative, pedagogical, action research.

Participant 2: engaging with students

Outcomes

Action-based learning activities between face-to-face sessions helped students arrive prepared for lecture sessions and gave guided practice in applying theoretical information between lectures. Students could see the relevance of course learning outcomes and the importance of each online activity in the online learning environment. Student comments below indicate my goals to transform teaching and learning were met, at least in part.

The labs, quizzes and assessments of any kind were all linked and made sense that once a module had been taught it was easier to revise for because the information was very clear. (Student feedback)

Everything had a reason to it, which always linked to learning outcomes. (Student feedback)

Since implementing this approach, students recognised my positive educational impact by awarding me College Lecturer of the Year for three years running.

Reflections

CIRCLE held me accountable for continuing this time-consuming project by reporting to my group of 'critical friends' and reflecting regularly on my progress. More importantly, the interdisciplinary nature of our group enriched my 'toolbox' of teaching practices and resources beyond those typical in traditional, science-based courses and catalysed pedagogical transformation.

Participant 3: student success – a course level case study

Outcomes

Introducing the first assessment in this course as early as possible enabled earlier identification of under-performing students, more specific investigation of their issues, and targeted strategies to address these promptly such as forming a special Mandarin language tutorial group after individual students highlighted language difficulties. This approach led to improved student success strategies in a second-year course and fostered increased engagement between students and their teacher, as well as their subject matter.

There is insufficient evidence to generalise results due to structural and environmental changes. However, initial indications suggested the benefits of early assessment to create early awareness in students of their likelihood of success, and to foster increased engagement with under-performing students.

Reflections

Improving the quality of teaching can be a generic and somewhat blunt instrument in relation to student success. The initiative taken highlights findings in prior literature that many different factors affect student success and suggests a more precise and individualised approach to identifying which students are most in need, what exactly are their needs, and how best we can address these needs. This approach should lead to improved student completion and pass rates, and average grades achieved – educational outcomes important to students as well as to tertiary institutions as they affect enrolments, funding, and rankings.

This project provided new insights into cultural and situational pressures affecting student success and increased sensitivity regarding strategies to address these. Closer cooperation between teacher and student success specialists developed a deeper understanding of each other's specialist skills and greater teacher empathy regarding students and student diversity. CIRCLE led me to focus on early identification of student success issues and explore and measure the effectiveness of strategies to address these rather than relying on more traditional, post-course student satisfaction surveys to enhance my teaching. I appreciated support from fellow professionals and exposure to innovative ideas and different perspectives that motivated a change in my practice.

Participant 4: improving student engagement

Outcomes

There was greater engagement of students in the major assessment activity and improvement in the quality of all assignments from these transformations in learning delivery compared to many disheartening and tedious responses previously. The in-group presentations became formative with students presenting their research issues to peers for critical feedback and ideas for improvement. The reports generated were a joy to read. Student feedback on the changes was spontaneous and very encouraging and attested to their enjoyment of the new format, the process, and how much they learned. Students and instructor agreed that offering the course in a block enabled students to be more focused, involved, and committed to their project. A particularly pleasing outcome was having one student pass who was repeating the course for the third time.

Reflections

CIRCLE created space and time to explore doing things differently that generated new ideas while providing trustworthy and respectful confrontation that helped focus courses of action. I learned how to transform the format of the course to enhance student learning and increase student commitment to their research projects. I experienced the benefits to students of self and peer assessments in my classroom. CIRCLE expanded my collaboration skills while working on two publications with my colleague from a different field of practice.

Participant 5: managing the content – a flipped approach

Outcomes

The students were able to watch, pause, and review the topic using the pre-learning videos when they had time, prior to the lecture session.

Having the opportunity to view lecture notes and slides along with video resources beforehand allow me to prepare for the class, as well as utilise my time. (Student survey)

I find that listening [to the video lectures] helps me to formulate questions I might want to ask during the lecture... [and] also helps towards class discussions. (Student survey)

The presentation of course material is not yet at a heutagogical level (Blaschke 2012) in which the students choose ‘what’ or ‘how’ they engage with the topic, but all teaching was based on andragogical principles, giving students a greater sense of ownership of the learning processes.

The quizzes that we do in lectures allow me to test my knowledge in a manner that isn’t uncomfortable or pressured. (Student survey)

Furthermore, in-class quizzes using Kahoot enabled identification of content areas that were understood and those requiring further development in subsequent, simulation laboratory sessions. The content delivery now provides cohesive, sequential learning activities that promote learning at a higher level of Bloom’s taxonomy (Anderson, Bloom, and Krathwohl 2001) involving application and synthesis and supports deep learning.

Reflections

Ongoing discussions within CIRCLE provided multiple, rich opportunities for cycles of reflection in and on action (Bleicher 2014) in a dynamic environment of challenge, questioning, support, and embellishment of my teaching hunches and ideas which transformed my teaching practice and collegial collaborations. The opportunity to bring outcomes of implementations to the group for reflection, critique, encouragement, and refinement has supported development of my teaching expertise.

This research suggests effective learning can occur in tertiary contexts with the provision of online learning content prior to a lecture in combination with in-lecture activities which enable students to delve deeper into a topic to enhance their knowledge. Subsequent iterations of this course have provided effective, pre-lecture learning activities with increased levels of active learning opportunities throughout course delivery. This will be reported on in a future publication.

Participant 6: creating cultures of respect and acceptance

Outcomes

Staff involvement in a Rainbow Tea at Orientation facilitated supporting students to establish a university student pride club that meets once a week for support and planning. I built networks with staff and students (e.g. a CIRCLE member’s class), staff at other campuses, and tertiary institutions (co-presenting at the Australia New Zealand Student Services Association conference). I lobbied successfully for my

university to apply for the Rainbow Tick accreditation from a national diverse sexual orientation and gender identity (DSG) inclusion and acceptance monitoring organisation.²

CIRCLE's focus on social justice concerns encouraged and supported my work with a group of diverse staff from around the university to establish networks and promote events such as our stall at the Big Gay Out (a queer pride event in an annual pride festival in our city) and acknowledgement of Transgender Remembrance Day. This project is yet to make a definable impact on teaching, but the work continues with the aim of creating a more inclusive teaching environment.

Reflections

Heteronormativity and narrowly enforced gender expectations are deeply embedded in every crevice of our social interactions and institutional engagement and tend to be invisible except to those directly affected. Moreover, because of the prevalence in society and many tertiary institutions of DSG tolerance or pseudo-inclusivity (Piedra, Garcia-Perez, and Channon 2017) controlled by the heteronormative, cisgender majority, DSG-led initiatives need straight allies in a university for progress to be made. CIRCLE gave me trustworthy allies who provide support and leadership.

Participant 7: shifting resistance to terminology

Outcomes

The change of terminology in the course from 'sustainability' to 'communication of care,' shifted resistance so that integration around the theme of sustainability occurred naturally for students across disciplines when they worked on shared projects. Sustainability is now being introduced through all levels of the programme.

The project format prompted students from specific majors to collaborate, (i.e. fashion students, already experienced in sustainability) in seamlessly developing and implementing their projects. International students across disciplines tended to work together. Fine Arts, Graphics and Photography students appeared to collaborate across the board, believing the scope of their disciplines enabled this more readily. Students commented it was great to work with people they did not know well, and it diversified their skill base.

The transdisciplinary nature of CIRCLE gave me strength of voice, enabling me to articulate my projects and clarify my aims. I integrated many of the tools shared by my fellow inquirers into the learning environment with very positive outcomes.

Reflections

Changing the course and programme level descriptors showed the importance of using terminology that enhances connections rather than technical terms that unintentionally create distance. CIRCLE members encouraged me to harness my positional power for the benefit of my organisation in my newly appointed role as Head of Department. I experienced and confirmed the benefits of transdisciplinary collaboration through CIRCLE giving me insights and perspectives from different disciplines that I could adapt and include in my teaching and learning approaches in my discipline.

Discussion and conclusions

Napan et al.'s (2018) findings were supported by the individual reports and reflections of our CIRCLE members in this paper. We have shown that transdisciplinary CI groups encourage and enrich participants' attempts at pedagogical transformation through a CAR framework that includes a RCAE approach to analysing the outcomes and experience of a PedAR project.

We used the CI approach to cultivate an environment that nurtured Action Research principles of integrating theory and action to critically address a real-life issue with those experiencing it (Coghlan and Brydon-Miller 2014). We were motivated to explore new knowledge that improves practice using new approaches implemented in actions as the basis for reflection to catalyse further participation in cycles of change (Bleicher 2014). Using cycles of discussion, action, reflection on action, transformed action, reflection on transformed action, and enhanced transformed action, we brought about change in ourselves and the situation supported by the integration of research and practice (Savoie-Zajc and Descamps-Bednarz 2007). CI enhanced CAR elements of participant/researcher interactions generating a common focus for investigation, a mutual definition of the problems, collaborative investigation of solutions, shared production of results, and shared construction of knowledge and understanding relevant to the practice and theory of the problems (Bruce, Flynn, and Stagg-Peterson 2011; Savoie-Zajc and Descamps-Bednarz 2007). Integral to our research was the essential PedAR goal of addressing a pedagogical issue and working out how to deal with it by systematically investigating our own practice so as to transform our action and contribute to pedagogical theory (Arnold and Norton 2021).

The findings offer academics valuable, creative, and effective research, pedagogical, and academic (and implied social, economic, political) benefits for tertiary stakeholders that would not occur otherwise. The individual outcomes and reflections above inform responses to our research questions below.

Transformative teaching practice

RQ1: Can reflection on changes made through CI to learning environments in our individual projects contribute to transformations in our teaching practice?

The outcomes sections report participants and students experienced learning activities that were novel and effective for both learning delivery and acquisition.

RQ2: What effect does CI have on the development and utilisation of these teaching practices?

All participants' outcomes and reflections sections document the importance of the CI group in supporting the development, implementation, and improvement of the transformative teaching strategies used.

Student experience

RQ3: What impact do these transformations in teaching practice have on student experience and outcomes?

The outcomes sections for each participant provide generic and anecdotal evidence of the positive impact of the CI process on the effectiveness and enjoyment of the teaching and learning experience for students and teachers. CIRCLE members observed improved student achievement outcomes because of these transformative teaching practices. However, this is only anecdotal evidence and a deeper analysis of impact on students is beyond the scope of this article. A proper evaluation with students as participants would be useful but would require high-level, ethical approval for using students as participants because of the multiple ethical issues that may occur.

Teacher experience

RQ4: Is a transdisciplinary inquiry group in a performance-based research environment effective in catalysing pedagogical transformation?

Transdisciplinarity in CIRCLE encouraged and enriched participants' attempts at pedagogical transformation. Research outputs developed from these projects (and those from new collaborations amongst group members) have contributed to group members' PBRF³ scores, and thereby legitimised the scholarship of transformative teaching and learning in performance-based university environments. Direct CIRCLE research outputs include two publications and nine presentations, and ancillary research outputs from new collaborations among group members include three publications and four presentations.

RQ5: Do fun and engagement in monthly meetings and supporting one another in our creative endeavours expand our research creativity and contribute to survival in neoliberal academia?

Definitely! The joy and camaraderie that developed is irreplaceable. The group continued existing (now in its seventh year) and it is still a source of support and creativity which proved very useful during times of the pandemic when we had to move online. This article has shown the positive impact of the CI process on the development of a more collegial culture (Sanderson and Watters 2006) in the university setting. Furthermore, the model we have developed and implemented is now under consideration by the teaching and learning leadership team of the institution to which most of the participants belong as an effective way of achieving strategic goals in a new, university-wide, teaching and learning strategy.

Limitations

The qualitative, autoethnographic, reflective approach taken is a transparently idiosyncratic examination of our own experiences. Moreover, the data comes from perceptions of

our own experiences. Therefore, generalisability of our findings is not intended, however, our findings will be relevant to people who recognise their experience in our reflections or those who will get inspired by actions undertaken.

The participants are white, middle-class academics, making our research somewhat culturally bound. However, each participant is committed to decolonisation of academia, ethics of restoration and the implementation of culturally inclusive practices. We work with culturally diverse students that influenced the content and the process of our teaching practice.

Reports of beneficial outcomes for students are based only on generic, institutional, post-course surveys and researcher perceptions of student achievement and engagement. A future project could involve collecting data on student evaluations of innovative teaching and learning activities and the distribution of grades in courses using these activities and these would need to be done by a third party.

Future directions and strengths

Now in its seventh year, CIRCLE has continued to develop and grow and encouraged the formation of transdisciplinary CI teaching and learning circles in multiple locations in the host institution. New collaborators have joined, and some maintain membership remotely through video meetings. New CIRCLE member projects include exploring:

- the use of blended learning in an internally taught course with an emphasis on new technologies to augment content delivery online
- the use of culturally appropriate and pedagogically robust ways of cultivating the enactment of critical thinking in international students
- the learning aspect of interspecies communication observed in post-traumatic growth with horses
- the development of educator skills using a psycho-social, cognitive growth approach for enhancing international students' learning outcomes
- the impact of accounting students being involved in a community accounting project with not-for-profit organisations
- the effect on art and design students' understanding of sustainability and social justice through involvement with a neighbourhood, shared meal initiative.

Key elements that emerged and proved to be effective in CIRCLE are leadership by example from our group expert on CI; authentic compassion; commitment to each other's projects; a minimum of monthly, two-hour meetings with an optional lunch together; mutual respect and appreciation of differences; unconditional support; listening to ideas without criticism; academic humility and reciprocity; shared chairpersonship; a love of teaching; and genuine curiosity. We recommend the formation of multi-disciplinary CI groups to engage in pedagogical CAR as effective for enhancing teaching excellence and increasing research outputs. Our experience suggests such endeavours increase the quality of teaching and student engagement and a tertiary institution's capability to meet the expectations of society, students, investors, and government by enhancing teachers' understanding of their students' needs, and by increasing students' engagement and commitment in their learning experience.

Notes

1. Māori are the indigenous population group of Aotearoa New Zealand. Pasifika students come from a wide range of countries within the South Pacific, each with distinctive language and cultural identities.
2. Rainbow Tick is a certification mark awarded by Rainbow Tick NZ to organisations that have successfully completed a diversity and inclusion certification process regarding their Rainbow personnel. It indicates a progressive, inclusive, and dynamic organisational environment (see www.rainbowtick.co.nz).
3. The Performance Based Research Fund (PBRF) in New Zealand determines tertiary institution funding levels from the central government Tertiary Education Commission (TEC). This is New Zealand's implementation of performance-based funding in contemporary universities explained in the Introduction.

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Appendix 1

Individual project details

Participant and project	Intentions and aims	Transformative activities
P1: Expanding student creativity within a compulsory prescriptive Master of Applied Social Work course on management in social services.	<ul style="list-style-type: none"> • Create an environment in which students do their best in a course for which they are not very motivated • Engender excitement within an unpopular course • Increase student motivation, engagement with course material, and overall learning • Change perceptions of students not seeing themselves as managers • Nurture relevance of management for social work practice. 	<ul style="list-style-type: none"> • Involving students in designing most aspects of the learning experience including criteria and format for assessments • Developing personalised learning contracts as living documents in which prescribed learning outcomes became inquiry questions related to their areas of interest • Expanding the reading list of three, dry textbooks with resources for students to select based on their inquiry questions • Encouraging students interviewing social service agency managers • Using guest speakers and video clips to expand course material • Accepting group and artistic assignment submissions consistent with learning outcomes • Introducing peer and self-reflections to enhance assignment quality and inform final assessment • Accepting students' request to self and peer assess descriptively with the lecturer assigning a final mark and detailed feedback • Assessing student work with predetermined criteria allocating most marks for coverage of prescribed outcomes • Introducing a group assignment to practice and evaluate essential management skills.
P2: Engaging with students through blended learning	<ul style="list-style-type: none"> • Demonstrate the efficacy of blended learning through a smooth transition between face-to-face sessions and online resources (Legge and Pannan 2015) and directing students to meaningful action-learning activities (Thomas et al. 2017) based on principles of constructive alignment (Biggs 1997) • Enhance students' understanding of the importance and relevance of online learning activities to course outcomes • Encourage students to be better prepared for understanding the face-to-face session content more deeply. 	<ul style="list-style-type: none"> • Providing action-based learning activities online between the scheduled, face-to-face sessions with guided practice in applying theoretical information presented in lectures • Directing students to specific, weekly activities that guided their independent study and linked learning modes (learning activities included worksheets, self-tests, video watching or document reading with short review questions, pre-readings of the textbook, and suggestions of optional resources to review for relating theory to real-world problems).

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Participant and project	Intentions and aims	Transformative activities
<p>P3: Enhancing student success through the design and timing of a first course assessment, and engagement with underperforming students identified in the assessment</p>	<ul style="list-style-type: none"> ● Address concerns about a long tail of failing students (mostly international with English as a second language) in an introductory accounting course for a business degree ● Facilitate a more targeted, class-based identification of specific problems and finding appropriate solutions to improve teaching, student engagement, and student success ● Consider factors inhibiting student success such as student health, personal circumstances, language difficulties ● Evaluate the effects of embedding student success initiatives/expertise at course level rather than at the traditional university level ● Identify, with students, reasons for underperformance, potential resolutions/interventions, best implementation of these using novel strategies early in these students' academic careers ● Produce enhanced outcomes for students in this critical, foundational course. 	<ul style="list-style-type: none"> ● Collecting data to inform understanding of critical factors associated with student success and obstacles impeding it ● Identifying the struggles of struggling students ● Creating an opportunity to explore, with student success advisers, possible causes for these student struggles to facilitate remedial actions ● Applying Doran and Bouillon's (1991) findings that the first examination in Accounting I is the best predictor of later performance in Accounting I and II ● Exploring how moving an assessment from the middle to the beginning of a course might help predict and address student success issues in a timely manner and enhance their final completion and grade achievement outcomes.
<p>P4: Improving student engagement in an unpopular Bachelor of Social Work fourth-year research course</p>	<ul style="list-style-type: none"> ● Raise the level of student learning ● Improve student engagement by creating a supportive and developmental environment ● Evaluate the impact on student learning. 	<ul style="list-style-type: none"> ● Transforming teaching in weekly sessions throughout a semester into three, one-day blocks of content delivery ● Grouping students to create collaborative responses to assessment tasks ● Getting students to present findings in small groups that peer-assessed their work with feedback for use in improving the final report product.
<p>P5: Managing content – a flipped approach in a nursing assessment course</p>	<ul style="list-style-type: none"> ● Address apparent surface knowledge reported in student feedback on the large volume of material taught ● Promote deep learning by shifting the emphasis of the student learning experiences within lectures, from primarily knowledge transfer and sense-making to knowledge synthesis and application ● Replicate Simpson and Richard's (2015) findings that a flipped classroom approach led to higher levels of engagement with course activities. 	<ul style="list-style-type: none"> ● Reorganising primarily didactic lecture content into flipped-learning delivery (Della Ratta 2015) through pre-learning videos (PLVs) and activities ● Ensuring the first activity in the face-to-face lecture spring-boarded off the pre-learning activity ● Conducting in-class individual and group activities and online Kahoot quizzes ● Introducing regular state changes to 'wake up' and reengage the learners' brains every eight–12 minutes between 'chunks' of content. This change of pace supports neural

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Participant and project	Intentions and aims	Transformative activities
<p>P6: Creating cultures of respect for and acceptance of diversity in sexual orientation and gender identity (DSG)</p>	<ul style="list-style-type: none"> ● Acknowledge the diversity of students in the societal context of a tertiary campus ● Increase students' success by cultivating an inclusive environment that enhances their safety, acceptance, feelings of belonging, and respect for their diversity in the norms and regulations of the organisation ● Use a social exchange approach (Cook et al. 2013) to engage students and staff in launching multiple initiatives. ● Overcome the resistance to integrating the contested social 	<p>pathway and knowledge development (Thiagarajan and Tagliati 2012). These include moving to another part of the room to teach, running a quiz, making a deliberate error, or facilitating an engaging activity that gets the class discussing, thinking, or laughing</p> <ul style="list-style-type: none"> ● Cultivating a learning environment on andragogical (Knowles, Holton, and Swanson 2011) and, potentially, heutagogical principles (Blaschke 2012) that puts the learner in control of what, when, why, and how they learn ● Providing learning opportunities, including: choice of topic engagement, opportunities to foster curiosity, and frequent pauses within lectures ● Catalysing students' personal motivation to engage with the pre-learning by the initial part of the face-to-face time springboarding off aspects included in the pre-learning ● Incorporating another CIRCLE group member's suggestion of using the SQ3R strategy for enhancing long-term memory through multiple opportunities to learn, review, and revise new knowledge (Robinson 1978) ● Presenting multiple opportunities through pre-learning material, in-class application, in-class quiz, post-class simulation lab, and clinical placement application for students to review the content to embed the learning and enhance long-term memory. ● Working with two DSG groups (Out and About @ Massey and a student/staff advocacy group for the inclusion and support of DSG people on campus) and CIRCLE ● Supporting the development of a Massey Pride student Club ● Acknowledging and engaging in significant events for rainbow communities ● Promoting visibility and inclusion to improve student well-being. ● Reframing the issue by employing a community of practice

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Participant and project	Intentions and aims	Transformative activities
P7: Shifting resistance to terminology in a Bachelor of Fine Arts (BFA) degree programme	concept and practice of sustainability as a core course component across disciplines <ul style="list-style-type: none"> ● Shift resistance to the term 'sustainability' ● Explore how to marry theory and practice in an Arts and Design Year 3 BFA elective ● Evaluate the level and impact of collaboration within transdisciplinary groups engaged in sustainability-oriented projects. 	approach (Schwen and Hara 2003) <ul style="list-style-type: none"> ● Changing the terminology of the goal of achieving sustainability to a goal of creating a 'Community of Care' ● Using enjoyable, collaborative activities to establish trusting relationships within cross- and trans-disciplinary groups ● Using the multi-disciplinary composition of the groups to explore how different disciplines could add value to each project.