Picture Perfect: The Potential of Photos in the Tertiary Classroom

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Adrianne (Adie) Maree Haultain

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Abstract

Photos are taken in order to capture a moment in time. Their very nature inspires a desire to share that moment in time. Mystery surrounds the participants involved: Who took this photo? Who are the people in the photo? Why was the photo taken and what is the story they have to tell? Emotions are ignited and remembered every time we glance at a photo. Something so small, that can stir such power, deserves to be exploited as much as possible in the very visual world in which we live today. The purpose of this study was to investigate ways in which photos were currently being used by a group of tertiary teachers in an Institute of Technology and Polytechnic in New Zealand. The study was exploratory in nature examining reasons why teachers were using photos and investigating the benefits of doing so. Additionally, this study deliberated ways photos could be utilised more to encourage interactive use of photos in tertiary contexts, in order to enrich teachers' and students' educational experiences. A survey, interviews and classroom observations were carried out in data collection to help gain an insight.

Results showed many benefits in using photos to promote 'Huakina', the opening of the door to learning. These included encouraging student engagement, bridging knowledge gaps, enhancing and developing critical thinking, building relationships and social learning, and highlighted benefits for assessment purposes. The benefits of using photos in an interactive manner through the use of open-ended questions, as in the Huakina approach, was found to foster deep learning. The study revealed the need for teachers to carefully plan their use of photos emphasising the need for clear scaffolding and modelling of tasks, along with the need to ensure constructive alignment with the intended learning outcomes. A prominence was placed on the necessity for visual literacy guidelines to be delineated in order to utilise photos more, along with an emphasis for further professional development for teachers. The role of institutional sponsorship comes into play with staff requiring time and knowledge to plan for the better use of photos to enhance teaching and learning.

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Chapter One: Introduction to study

A photograph is a secret about a secret. The more it tells you, the less you know.
Peter Gasser

Photos are an integral part of our everyday life which manage to capture a moment in time. Photos have the ability to communicate complex messages. They create a new universal language which we are yet to fully understand. This research study explores ways photos are being used by a group of higher education teachers from a tertiary Institute of Technology and Polytechnic (ITP) in New Zealand. It focuses on their use of photographs as a teaching and learning tool, and deliberates their potential for further use.

1.1 Background

The world in which we live is becoming increasingly visual. There is mounting demand for individuals to be able to use, understand, and create visuals within their day-to-day life. There is little doubt photos have the potential to evoke emotions and memories, stimulate discussion, communicate ideas, and aid concrete understanding of complex matters. Photos are such an established and conventional part of our life that their potential within education is often overlooked. Whenever we view a photo or a picture, the power that photo evokes can be vivid, thought-provoking and generate intense emotions. The influence of photos within research has been recognised over the years (e.g. Collier & Collier, 1986; Salmon, 2001; Pink, 2001), and as a result they have been used to capture and stimulate people's thoughts and experiences. As tertiary educators, it is imperative the benefits of photos are recognised and the skills required to become visually literate are developed and encouraged.

Photo-elicitation was initially used within research, and is defined by Harper (2002) as the simple idea of inserting a photograph into a research interview to elicit information. It is primarily used to guide research interviews, and to trigger participants' memory as a form of stimulated recall. John Collier, a Cornell University photographer and researcher, is often credited with being the first person to conduct and classify photo-elicitation within research. Collier and Collier (1986), describe the use of photos as being "communication bridges between strangers that can become pathways into unfamiliar, unforeseen environments and subjects" (p.99), highlighting positive influences of photos on the researcher-participant relationship. The increased prevalence of photos within research may be related to technology advancements, such as digital cameras becoming more commonplace and inexpensive (Epstein, Stevens, McKeever, & Baruchel, 2006). Photography is now a common everyday occurrence which helps to demystify this form of data collection.

1.2 Context

This study took place within a New Zealand ITP, and focused on teachers' use of photos to enhance teaching and learning. Study participants were drawn from a range of teaching disciplines and teaching levels. I have an existing interest in the use of photos as a data collection tool within research. While desiring to transfer this potential to my teaching, there appeared to be limited supporting literature surrounding the use of photos within tertiary contexts, in particular within New Zealand. This thesis provided an opportunity to investigate further how teachers could use photos more effectively to enhance teaching and learning in tertiary education.

1.3 Research Aim and Questions

The purpose of this study is to examine the ways in which photos are currently being utilised within the tertiary classroom to enhance teaching and learning.

Furthermore, this study seeks to understand how photos could be used by further exploring the implications for teachers, to ensure more effective use in the future.

My research questions therefore were:

- In what ways are photos currently used within the tertiary classroom in order to aid teaching and learning?
- How can photos be utilised further by teachers within the tertiary classroom in order to assist students' engagement and knowledge development?

1.4 Outline of Methodology

This research project was a qualitative study, with an interpretivist approach. The research aimed to explore ways in which photos were currently being used within a tertiary institution and the reasons behind the use. The central aim of this study was to gain an appreciation of the benefits of using photographs. It was largely concerned with individual participants and with a desire to understand their experiences (Cohen, Manion, & Morrison, 2007). The research was naturalistic, whereby the research took place in a natural context with no attempt to manipulate the situation (Robson, 2002).

Participants consisted of 31 initial survey respondents, including six academic staff members from a range of teaching disciplines who participated further. Feedback was gained from some students within participants' classes. The study employed a range of different methods of data collection: On-line survey, individual interviews, photo elicitation, and classroom observations. Analysis of data was consistent with the Grounded Theory approach as described by Charmaz (2006), using memo writing and thematic analysis throughout.

1.5 Significance of research

Quality teaching enhances quality learning and is an area that deserves a dedicated focus, particularly in ITPs where many of the teaching staff have had no targeted teacher training. Photos appear to be completely underutilized within tertiary education, highlighting an area of education that deserves greater examination to enhance teaching and learning, and development of professional practices. Within New Zealand's Ako-influenced education system photos offer advantages. Both teachers and students need to understand how to utilise photos within an academic setting; they need to become more visually literate to make the most effective use of this everyday tool. In order to work towards this, I first needed to investigate what is currently being done. It was anticipated this study would contribute to knowledge surrounding the use of photos as a teaching and learning tool at tertiary level, helping to develop an understanding of what is required for them to be better used.

1.6 Overview of Thesis

This chapter has already introduced the study, provided the background rationale for this project and outlined the context and overall aim of the research. The research methodology adopted is summarized, along with the purpose for conducting this research. Moving forward, chapter two contextualizes the research within a review of the literature, which helped inform this study. Chapter three describes the methodology employed for this research in detail. It outlines the researcher paradigm, explores ethical considerations, and outlines data collection processes undertaken, and methods of analysis of data. Chapter four provides a detailed description of themes that emerged from findings, while Chapter five discusses the key findings from the data collected with references to literature. Chapter six concludes the thesis, drawing recommendations from findings, which relate back to the initial research questions. Limitations of the study are highlighted within this chapter, as are recommendations for future research.

Chapter Two: Literature Review

When words become unclear, I shall focus with photographs. When images become inadequate, I shall be content with silence.
Ansel Adams

2.1 Introduction

The purpose of this chapter is to foreground literature on photos which is pertinent to the research questions. The chapter has been organised into four sections. I firstly look at theoretical considerations relating to teaching and learning in tertiary contexts. The second section outlines the scope of literature reviewed, while the third section overviews ways photos are being used in the tertiary classroom. This chapter concludes with summarising some perceived gaps within the literature.

2.2 Theoretical considerations.

Central to this study are my own interests in relation to teaching and learning in tertiary contexts, and the ways in which these link to the use of photos. The following discussion outlines relationships between the use of photos and good teaching. I start by outlining the relevance of social constructivism within education, followed by an overview of Ako, a focus on the Ripples of Learning model, and lastly consider the relevance of Constructive Alignment when planning for teaching (Figure 2.1).

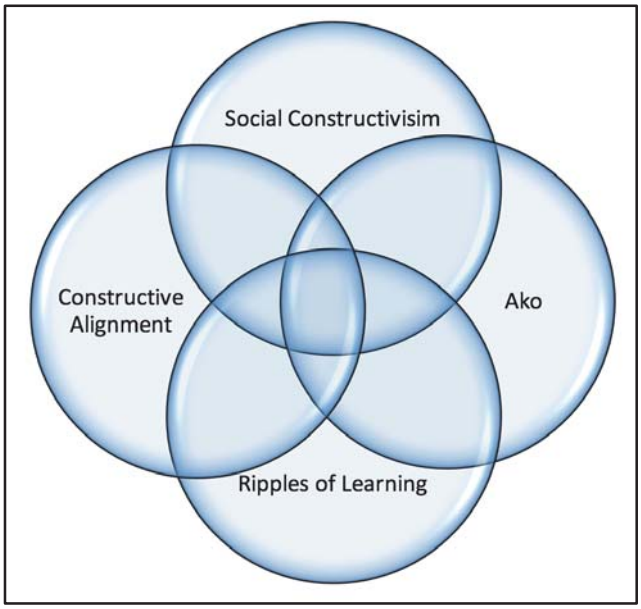

Figure 2.1: Theories considered

2.2.1 Social constructivism

There is an emphasis placed on social and situated learning, and relationships between people and the environment, in higher education contexts (Brockbank & McGill, 1998). Social constructivism focuses on learning as a collaborative process which involves active construction of shared understanding. This principle is strongly influenced by Vygotsky's social constructivist beliefs. Vygotsky (1978/1997) believes learning is a result of social interaction, and of importance is the way in which learners interacted with their new knowledge community. He states "[a]ll the higher functions originate as actual relationships between individuals" (p.57). Particularly relevant to the use of photos is Vygotsky's belief that learning is mediated through cultural artefacts, the most important of which is language. Language and culture play a central role in learning, being the framework for experiences and communication, and are central to understanding. Vygotsky believes it is through social interaction that knowledge is co-constructed. This 'cultural mediation' is the notion that knowledge is gained through these interactions and represents shared knowledge of a culture. Photos have become an increasingly important cultural artefact which can fit well into this framework. Photos can be used to represent

cultures, stimulate discussion, communicate ideas, scaffold learning, and are easily shared.

Vygotsky's (1978/1997) theory of Zone of Proximal Development (ZPD) links to collaborative learning. Within his ZPD he contends learners have an actual level of development where they are currently, and a potential level of development which he maintains is the learner's ZPD. Learners have the potential to learn, under guidance of teachers and peers and this is where teaching is optimally effective (Richards, 2015). The ZPD provides educators with a means of facilitating learners' internalisation (Vygotsky, 1978/1997). Vygotsky argues that teachers need to target activities and strategies within the ZPD by encouraging collaborative learning, modelling the tasks and making the purpose and contexts of tasks clear (Stewart, 2013). There is a clear opening for photos to aid modelling and scaffolding of tasks.

Closely related to Vygotsky's ZPD is the concept of scaffolding, which refers to steps taken in order for learning to happen. For learning to take place there needs to be social interaction as it is within these environments that learning occurs (Bruner, 1978). Scaffolding refers to the purposeful steps taken by a parent or teacher to help develop learning. The level of support varies to suit the cognitive potential of the learner, and works to maintain the potential level of development. Scaffolding is a temporary framework of help, aimed at assisting learners to complete tasks independently. "[Scaffolding] refers to the steps taken to reduce the degrees of freedom in carrying out some task so that the child can concentrate on the difficult skill she is in the process of acquiring" (p. 19). Richards (2015) suggests learners in any context should be guided through scaffolded learning until they can complete tasks independently highlighting the need for learners to develop interactional competence.

2.2.2 Ako

The concept of Ako, based on New Zealand Māori pedagogy, aligns with Vygotsky's and Bruner's learning theories. Ako promotes social relationships between teachers

and students, respecting and valuing the knowledge they bring with them and building on shared knowledge. In a New Zealand based study, the influence of Ako is undeniable, and it is pertinent to consider the principles and values of Ako within ITPs. Ako is described as the practice of both teaching and learning within a caring and inclusive environment. Ako portrays a holistic view of learning based on spiritual and emotional well-being in addition to cognitive learning (Pere, 1982; Keown, Parker, & Tiakiwai, 2005). It is focused on building relationships between teacher and student where both learn from each other in a reciprocal manner. Traditional values such as manaakitanga – the process of showing respect or caring for others - and whanaungatanga – the relationship gained through shared experiences – can be linked to Ako (Pere, 1982). Sharing of photos, although not widely recognised yet, is a way of sharing values and respect between teachers and students, as Ako places emphasis on contributions of individuals within the whole group.

2.2.3 Ripples of learning

Educational and training developer Phil Race draws on many of the above principles when creating his 'Ripples of Learning' theory. Race (2014) believes there are seven basic elements constituting successful learning. This is based primarily on his belief that the most effective form of learning stems from experiential learning, or by the students actively participating and reflecting on their learning. These seven elements, along with the teacher's participation within each element, ensures students are learning (Table 2.1).

Just as Bruner (1978) saw motivation as essential for learning, Race (2014) places motivation, or 'wanting' and 'needing' to learn, in the centre of his model. Race further asserts students 'doing' plays a pivotal part in their learning, highlighting the social and active aspects of his theory. He suggests the process of learning involves active construction of knowledge requiring student-centred activity, championing Vygotsky's views that knowledge is constructed and co-constructed. Additionally, Crabbe (2007) highlights the importance for learners to be aware of the learning

taking place, which is in keeping with Race's (2014) views that learners need to know what is in the learning for them. Further, Race's feedback and teaching ideas parallel Ako pedagogy in the reciprocal nature of learning. Experiential learning incorporates active, participatory learning activities for students involved in a period of analysing and reflection and is considered superior to traditional lectures (Johnson & Johnson, 1982; Das, 2012; Race, 2014).

Table 2.1: Ripples of learning (Adapted from Race, 2014)

Basic elements	In order to teach better teachers need to:
Wanting – curiosity	Strive to enhance students' want to learn
Needing - commitment	Help students to develop ownership of the need to learn
Doing – competence development	Keep students learning by doing, practice, trial-and-error, repetition;
Making sense – contestation	Ensure students get quick and useful feedback – from teachers and from each other;
Feedback – communication	Help students to make sense of what they learn.
Teaching - coaching	Get students deepening their learning by coaching other students, explaining things to them.
Assessing – confirming	Allow students to further deepen their learning by assessing their own learning, and assessing others' learning – making informed judgements

2.2.4 Constructive Alignment

Taking the notion of constructivism one step further, Biggs and Tang (2007) discuss the concept of constructive alignment, whereby there is a belief that students learn by doing, with an emphasis on "learning and alignment in the design of teaching and assessment" (p.52). They focus on the role of teachers in fostering constructivist educational activities. Biggs and Tang contend it is actually what students do that is the catalyst for learning, and through the doing that knowledge is constructed, placing an emphasis on teaching and learning activities. In order to provide a supportive learning environment, teachers must ensure Intended Learning Outcomes (ILOs) are central to planning, with teaching activities and assessments carefully and deliberately aligned with the ILOs. Within a constructively aligned programme, teachers are responsible for providing a learning environment that supports activities learners participate in, which in turn supports their achievement of the ILOs (Biggs & Tang, 2007). The need to know is cultivated through teaching that encourages students' curiosity, builds on prior knowledge, and inspires students

to become responsible for their learning. Biggs and Tang caution failing to do so could demotivate and discourage students.

2.3 Use of photos in educational literature

Having established the academic notions underpinning the context of this study, this section will now explore how the focal element, photos, has been used in teaching, and how these practices might align with the ideas presented above. This section presents an overview of the scope of literature, firstly looking at the range of literature, followed by discipline areas, which details three cross-discipline studies and will finally outline the sources of photos amongst the literature.

2.3.1 Range of literature

Literature relating to the use of photos within a tertiary classroom was sought throughout the research project, consistent with Charmaz's (2006) Grounded Theory approach. The use of photos within our society, and education in particular, has significantly increased since the conception of camera phones in 2000 (Steinbock, 2005). Consequently, a range of peer reviewed articles, reports and chapters post 2000 were sought. While the initial search was limited to the use of photos within New Zealand tertiary institutes, it was widened to include literature from across the world due to a lack of current and applicable local literature (Table 2.2).

Table 2.2: Country of origin

Country of Research	Literature
New Zealand	(Meek & Buckley, 2011) (Johnson, Cowie, De Lange, Falloon, Hight, & Khoo, 2011) (Legge & Smith, 2014)
Australia	(Fanning, 2011) (Harvey, Baker, Bosanquet, Coulson, Semple, & Warren, 2012) (Rourke & O'Connor, 2012) (Duncan-Howell & Lee, 2007) (Bragg & Nicol, 2011) (Kawka, Larkin, & Danaher, 2012)
UK/Europe	(Jenkins & Lonsdale, 2007) (Sandars & Murray, 2009) (Power & Morgan, 2010) (Colombo, Lissoni, & Antonietti, 2012) (Erceg, Aviani, & Mesic, 2013) (Hall, 2009) (Gil-Glazer, 2015)
Canada	(Schell, Ferguson, Hamoline, Shea, & Thomas-Maclean, 2009) (Given, Opryshko, Julien, & Smith, 2011)
USA	(Taylor, 2002) (Bleed, 2005) (Jordan, Adams, Pawley, & Radcliffe, 2009) (Hattwig, Burgess, Bussert, & Medaille, 2011) (Walter, Baller, & Kuntz, 2012) (Baker, 2012) (Hattwig, Bussert, Medaille, & Burgess, 2013) (Richard & Lahman, 2015) (Munakata & Vaidya, 2012) (Bruce, McCandless, Berryman, & Strong, 2008) (Cook & Quigley, 2013) (Kates, Byrd, & Haider, 2014) (Kurtz & Wood, 2014)(Berry, Schmied, & Schrock, 2008)(Schocker, 2014)(Deale, 2014)(Sanders, 2007)
Other	(Dongre, 2011) (Johnson, Cowie, De Lange, Falloon, Hight, & Khoo, 2011) (Ruto-Korir & Lubbe-De Beer, 2012) (Schonborn & Anderson, 2010) (Das, 2012) (Schulze, 2007)

2.3.2 Discipline area

The studies reviewed were from a range of disciplines (Table 2.3). Notably there were more studies within fields of science and education, than from fields such as the trades, sociology, accountancy and tourism. The overall lack of literature investigating a variety of disciplines indicates an area that is open for further research.

Table 2.3: Research disciplines

Discipline	*Literature*
Science (Including Medicine, Health, and Sports)	(Johnson, et al., 2011) (Walter, Baller, & Kuntz, 2012) (Cook & Quigley, 2013) (Bragg & Nicol, 2011) (Kurtz & Wood, 2014) (Dongre, 2011) (Sandars & Murray, 2009) (Jenkins & Lonsdale, 2007) (Duncan-Howell & Lee, 2007) (Munakata & Vaidya, 2012) (Johnson, et al., 2011) (Hall, 2009) (Sanders, 2007)
Education	(Meek & Buckley, 2011) (Johnson, et al., 2011) (Jenkins & Lonsdale, 2007) (Kates, Byrd, & Haider, 2014) (Kawka, Larkin, & Danaher, 2012) (Legge & Smith, 2014) (McConnell, 2014))(Sanders, 2007)
Marketing/Arts	(Fanning, 2011) (Johnson, et al., 2011) (Harvey, et al., 2012) (Jenkins & Lonsdale, 2007) (Munakata & Vaidya, 2012)(Berry, Schmied, & Schrock, 2008)(Schocker, 2014)
Accountancy, Maths, Business	(Jenkins & Lonsdale, 2007)(Das, 2012) (Munakata & Vaidya, 2012)(Erceg, Aviani, & Mesic, 2013)
Tourism	(Power & Morgan, 2010) (Deale, 2014)
Trades	(Bruce, McCandless, Berryman, & Strong, 2008)
Information Science	(Given, Opryshko, Julien, & Smith, 2011)
Sociology	(Schell, Ferguson, Hamoline, Shea, & Thomas-Maclean, 2009)

As this research was a cross-disciplinary study, this became a point of interest in my literature search. Very few cross-disciplinary studies were found, with only two articles crossing a range of four disciplines, and a third looking at three disciplines. Firstly, Johnson et al. (2011), looked at the use of photos in their study into e-learning in New Zealand. Four different disciplines (Earth Science, online Post Graduate Education, Screen and Media, and a University Preparation course) involving over 400 tertiary students, with an overall goal of detailing and disseminating effective and pioneering practice for tertiary teaching were studied. They highlight the ability of e-learning tools, such as photos, to enhance visual and spatial thinking, maintaining they should be considered a valued component of tertiary teaching which requires further support.

The second article by Jenkins and Lonsdale (2007) was a UK based investigation into the use of digital story-telling as a tool for student engagement and reflection across four different disciplines within the tertiary setting (Student Induction, Landscape

Design, Accountancy and Sports Development). They looked at 29 student stories and conclude reflection can be enhanced as a collaborative process involving photos and that the use of photos is still in its infancy, indicating reasons for further research.

Lastly, US based Munakata and Vaidya (2012) researched the use of photos expressly as a means to "encourage students to find deep-rooted connections between science and mathematics and the arts" (p.121). Their goal was to use photography, a form of art, as a means to encourage students to actively find connections between mathematical and scientific contexts. They encouraged students to make their own meaning using photos in two situations, firstly a formal classroom setting and secondly during an outside activity. They conclude the experience gives students opportunities to compare the "true nature of scientific and mathematical progression" (p.127), providing students with a creative and novel way of doing-so through photos.

2.3.3 Sources of photos

Throughout the literature a range of photos were used for a variety of purposes. There is an increase in, and preference for, the use of students' own photos (student-sourced) with the majority of the literature encouraging students to take their own photos for activities rather than using teacher-sourced photos. Table 2.4 presents the sources of photos and identifies the purposes the photos were used. This aligns with Ako, and social and situated theories of learning, where emphasis is placed on tapping into students' prior knowledge and the sharing of knowledge. The increase in using students' photos is additionally linked to an increase in accessibility of cameras, which has impacted on the use of visuals within classrooms, with the notion that these new technologies continue to improve and impact on our teaching (Duncan-Howell & Lee, 2007).

Table 2.4: Sources of photos

Type of PE	Literature	Purpose
Student-sourced	(Fanning, 2011)	Reinforce learning; Discussion; assessment
	(Dongre, 2011)	Evidence of learning: Discussion
	(Schell, Ferguson, Hamoline, Shea, Thomas-Maclean, 2009)	Capture experiences; Learn from others
	(Meek & Buckley, 2011)	Evidence of learning; reflection
	(Sandars & Murray, 2009)	Reflection; Presentation
	(Walter, Baller, & Kuntz, 2012)	Reflection of learning; Create discussion
	(Deale, 2014)	Creating understanding; Use of photos as a teaching tool
	(Given, Opryshko, Julien, & Smith, 2011)	Sharing; Reflection and recall
	(Jenkins & Lonsdale, 2007)	Reflection and recall; storytelling
	(Jordan, Adams, Pawley & Radcliffe, 2009)	Understanding; sharing discussion
	(Munakata & Vaidya, 2012)	Encouraging Student creativity; Assessment
	(Das, 2012)	Use of photos as a pedagogical tool
	(Kates, Byrd, & Haider, 2014)	To create knowledge. Cognitive & emotional engagement,
	(Kurtz & Wood, 2014)	Use of photo-elicitation as a learning tool; Assessment
	(Hall, 2009)	To produce critical questioning
	(Sanders, 2007)	Explores how photos can be used to teach social geography.
Teacher/Other-sourced	(Fanning, 2011)	Introduce theory; Assessment
	(Ruto-Korir, & Lubbe-De Beer, 2012).	Understanding beliefs and experiences;
	(Bruce, McCandless, Berryman, & Strong, 2008)	Introducing topics to inexperienced students
	(Bragg & Nicol, 2011)	Using photos to contextualize math
	(Erceg, Aviani, & Mesic, 2013)	Exploring pedagogical opportunities of using photos in physics instructions

Not all research favoured student-driven photos, with Jordan, Adams, Pawley, & Radcliffe (2009) believing one method was not better than the other. They report students learn just as much from photos they had taken as they did from others' photos. They argue it is through sharing of photos, stories, and history that learning happened regardless of who provides the photo.

2.4 Photographs in the tertiary classroom

This section looks at themes that emerged from the literature, and is broken up into two broad categories: perceived benefits, and perceived limitations of using photos within tertiary classrooms. Each of the two umbrella sections have subsequently been divided into smaller subthemes.

2.4.1 Benefits

Analysis of the literature showed common themes emerging relating to benefits of photos as a means of generating interest and participation during class discussion, to

increase in critical thinking and learning. These have been split into three subthemes (Figure 2.2).

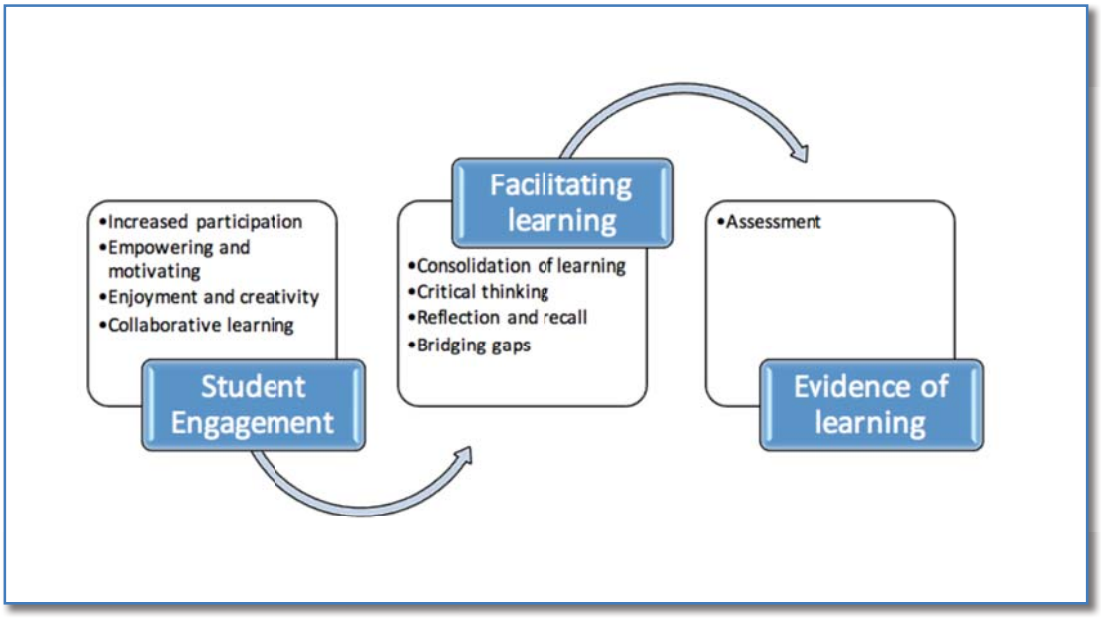

Figure 2.2: Emerging subthemes

2.4.1.1 Student Engagement

With an emphasis on active learning principles, it is vital students participate and engage in learning. Much literature describes ways in which photos increase student engagement in their learning (e.g. Sandars & Murray, 2009; Power & Morgan, 2010). The following section has been divided further, looking at ways in which photos increased participation, empowered and motivated students, increased student enjoyment and creativity and encouraged collaborative learning.

Increased participation

Photos increase students' participation within learning activities. Fanning (2011) explored the use of photo-elicitation within a university marketing classroom by applying three different usages of photos to elicit information from students. Firstly, teacher-sourced photos were used, along with carefully prepared questions, to introduce and explain theory and enable discussion. Secondly, photos were

employed to reinforce learning and to increase collective knowledge, with students required to work collaboratively to produce a participant-driven photo-essay to demonstrate learning. Finally, photo-elicitation techniques were used within an exam, whereby students could demonstrate their understanding through the teacher-provided photos. Fanning collected students' views on the use of photos through an in-class survey (58 students responded out of 110), a university generated online survey, and from recurring themes extracted from students' emailed comments. He observed increased student participation and interest when photo-elicitation was used, highlighting the interactivity involved with photos within the classroom. Fanning observes "it is through making sense of the photographs that the theory becomes real, therefore, it has a grounded element" (p.187). Photographs are pivotal in generating students' interest, encouraging questions and creating quality classroom discussion.

Photos are seen to increase student participation in classes. Dongre (2011) detailed how 20 medical students used photos within their study, and suggested the use of photos helps bridge gaps and promote communication, supporting students' active participation. Duncan-Howell and Lee (2007) in their overview of Mobile-learning (M-learning) initiatives within tertiary settings, report on the use of photos in teacher practicums in the University of Helsinki. They found the use of photos engages students in activities and aids in creating flexibility for the teacher.

While the majority of literature reported an increase in student participation this was not always the case, with some recording a resistance to engagment with photos (e.g. Das, 2012; Johnson, et al., 2011). Duncan-Howell and Lee (2007) discuss a lack of student engagement and raise pertinent questions surrounding the rise in popularity of mobile phones and our ability to harness this interest, to capture and encourage student participation further.

Empowering and motivating students

Race places 'wanting' and 'needing' to learn firmly in the centre of his 'Ripples of Learning', likening them to *intrinsic* and *extrinsic* motivation (Race & Pickford, 2007). Emerging from the literature is the notion of photos being key to empowering and motivating students (e.g. Sandars & Murray, 2009; Kates, Byrd, & Haider, 2014; Cook & Quigley, 2013). In particular photos are found to be beneficial within classrooms when student-sourced photos are used, as it results in a sense of empowerment for students as they take ownership of their learning, becoming more intrinsically motivated.

Research by Dongre (2011) reports the sharing nature of students' photographs encourages them to be accountable for their own learning, helping to foster an intrinsic motivation. This emphasises a sense of shared power between students and teacher seen reflected in Ako pedagogy. Likewise, Kurtz and Wood (2014) discuss benefits of photo-elicitation as a learning tool in food-geography classrooms. Their study focused on student-sourced photo-elicitation, concluding the use of photos can "empower students as learners and can usefully complement and deepen their engagement" (p.553). They believe using photos is unique as it allows for a platform to embrace students' diversity and backgrounds, further empowering students.

Increasing student creativity and enjoyment

The creativity and sense of freedom photos inspire ensures students are not only looking at a context, but that they are learning from these experiences and are drawing on previous knowledge (Schell, Ferguson, Hamoline, Shea, & Thomas-Maclean, 2009; Jenkins & Lonsdale, 2007). Creativity requires students to have an understanding of the content. It additionally requires having a strong interest and willingness to be involved, resulting in something innovative (Biggs & Tang, 2007). Vygotsky regards the creative process as a link between emotion and thought, believing artistic symbolism and imagination are important to learning, with an association between learning and creating meaning from one's own world (Lindqvist, 2003).

Photos are inspiring and encourage creativity, eliciting new topics not before discussed. Examples of student creativity were recorded by Power and Morgan (2010), who encouraged students to use photos as part of a BA Tourism Management field trip. They found increased involvement and creativity led to increased learning, concluding that photos are creative tools which encourage students to draw from prior experiences and stimulate imagination.

Another example of creativity was reported by Schell et al. (2009) when they studied the use of photos as a teaching tool in a sociology degree classroom. Students were exposed to a variety of research methods and methodologies and were asked to take photos, to "attach imagery to lived experiences" (p.340). The ensuing report includes the voice of both teacher and four students, resulting in an informative report with a strong perspective. They examine the influence of photos in creating a range of discussion opportunities, in encouraging students' imagination, and in stimulating their senses. They conclude "the freedom we had to make decisions about our assignments created much variation in the process of taking photographs, the selection of images, the analysis of the data and connection to themes, and the theories that directed our understandings" (p.348). Schell et al.'s example highlights how photos enhance creativity, stimulate learning and enrich enjoyment.

When students use their own photos there is an increase in enjoyment. Deale (2014) describes the use of students' photos for reflective purposes when 105 Hospitality Management students created photo essays of their communities. Students felt they learned better as it enables them to be creative within this form of storytelling. Likewise, Walter, Baller, and Kuntz (2012) in their investigation of photos as a catalyst for critical thinking, creativity, engagement and problem solving, and Munakata and Vaidya (2012) in their research into encouraging students to find connections between science, mathematics and the arts, found the use of students' photos is a critical catalyst for encouraging creativity and enjoyment.

Collaborative learning

Aspects of social and cooperative learning is demonstrated in all of the literature. In keeping with Ako, and social constructivist learning theories, using photos encourages a sense of shared teamwork. The collective, collaborative nature of photo elicitation is echoed in research where photos are seen as supporting students' learning and vital to encouraging the learners' participation (e.g. Dongre, 2011; Power and Morgan, 2010; Duncan-Howell & Lee, 2007). It is concluded that photos provide the context for learning and encourage participation of students by its two-way, interactive nature.

Kurtz and Wood (2014) used a narrative surrounding the collaborative nature of a story to introduce their research into student-sourced photo-elicitation. They conclude the collective quality of photo-elicitation provides students the opportunity to reflect on, not only their own performances and social assumptions, but also their peers, allowing for deeper understanding of a diverse range of experiences and backgrounds.

2.4.1.2 Facilitating learning

This section presents four subsections relating to the use of photos for the facilitation of learning. It looks at how photos encourage critical thinking, then discusses ways photos aided consolidation of learning. The third subsection examines the use of photos as a reflection tool, while the concluding subsection explores ways photos were used to bridge gaps in the students' learning.

Encouraging critical thinking

Critical thinking is the process of thinking that can occur as a result of closely examining an event, and is fostered within education (Brookfield, 1987). Brookfield suggests critical thinking includes four distinct steps: identifying or uncovering assumptions; testing the validity of assumptions; considering different perspectives; and making informed decisions based on this. Links can also be drawn to Vygotsky's ZPD as, in order to develop critical thought, teaching activities need to be within

learners' ZPD. Throughout the literature it is evident the use of photos is pivotal in encouraging students' critical thinking, as it provides experiences for students to discover meaning from (e.g. Walter, et al., 2012; Cook & Quigley, 2013; Kates, et al., 2014).

In order to stimulate critical thinking, Bragg and Nicol (2011) discuss the importance of designing open-ended problem photos. They initially looked at photos and questions set by teachers, and further explained this could be extended to students collecting images and brainstorming questions. They identified open-ended problem photos as being *interactive* when they were essential to the activity, and being *illustrative* when unnecessary to the completion of the task. Carefully designing of open-ended problem-photos is not only useful for students' learning, but the teacher is provided opportunities to look at problems with a more critical lens (Bragg & Nicol, 2011).

Increased critical thinking was reported by Schell et al. (2009) who contend the use of photos led to an increase in critical thinking, as students present their own photographs along with their rationale for taking photographs, providing them with a new way of understanding. Students recounted they "were engaged in critical thought throughout the assignment in order to create and present ideas that were meaningful, credible and authentic, which we understood more fully after engaging in the process ourselves" (p.348), highlighting the depth of critical thinking encouraged through photos. The use of student-sourced photographs, in particular, generates a deeper understanding of a subject rather than just giving them the ability to repeat knowledge. The very hands-on nature of photos allows both teacher and students to discover transferable skills to other disciplines (Schell, et al. 2009).

Likewise, Walter et al. (2012) investigated the use of photography in two health-science university classrooms, to encourage student engagement and critical thinking, encouraging students to take part in two student-sourced photo

assignments. They found these assignments "directly challenge students to perceive and capture via photographs" which in turn encourages the development of critical thinking (p.386). They do, however, add a cautionary note commenting that forcing students to participate in an assignment "pushes them to be creative, engaged with the topic, and willing to think critically" which can be problematic (p.388). To help overcome this they discuss advantages of giving examples to students prior to assignments, a form of scaffolding as described by Bruner (1978). Walter et al. (2012) however, caution that there is a fine balance here between helping and hindering students.

Consolidating learning

Making sense of learning is an important step which occurs when the environment for learning is right. Leach (2011) describes this environment as one that "encourages and supports questioning, discussion, debate and challenge" (p.126). It is palpable from the literature that there are real benefits for using photos to help consolidate students' learning (Schell, et al., 2009; Cook & Quigley, 2013; Power & Morgan, 2010; Fanning, 2011). Gil-Glazer's Israeli study investigated undergraduate education students' reactions, perceptions, and attitudes towards photographs that conveyed difficult or controversial messages (2015). Photos are perceived as an effective educational tool with Gil-Glazer concluding photos "serve as a critical-educational tool and provide an opportunity to conduct meaningful value-moral discourse" (p.263). Photos have great potential in promoting critical thinking and can be utilised for effective classroom discussion, stimulating new awareness amongst students, and consolidating their learning (Gil-Glazer, 2015).

Teachers' use of meticulously planned photos has added benefits of reinforcing students' understanding and application of theory, increasing learning. Fanning (2012) found benefits with using 'correct' photographs to help introduce, demonstrate, and review theory for a group of marketing students. While Fanning does not define 'correct photos', he highlights that photos need to be appropriate

for the context and that they are rarely the only tool being used, rather they serve to help ignite students' interest, and consolidate learning.

Reflection

Reflection is a process that helps us learn from our own experiences and those of others, and is the recipe for self-improvement (Zepke, 2011). Students are encouraged to reflect upon their lived experiences to gain deeper insights and to construct new knowledge. It is apparent the use of personal photos aids recall of experiences and subsequent reflection, in order to develop a higher order of cognitive learning, with much literature listing reflection as a primary reason for using photos (e.g. Fanning, 2011; McConnell, 2014; Harvey, et al., 2012). It is through critical reflection and social interaction that new awareness develops (Fenwick & Tennant, 2004).

Benefits in using photos are perceived by Schell et al. (2009), who maintain the use of photographs provides unique learning opportunities for both teacher and student. They report "photos required a level of reflection that exceeded what conventionally occurs when students get to know a topic through a literature review" (p.346). Photos are important pedagogical tools providing students with the opportunity to reflect, while proving to be a catalyst for discussion topics (Jordan et al., 2009). Likewise, in Power and Morgan's (2010) education field-based research, they used photography as a tool to assist their students to reflect on what they had learned, and maintain photos provide tangible evidence, giving students opportunities to reflect further.

Bridging Gaps

Photos are beneficial in bridging gaps within students' learning, and are of particular benefit for students for whom English is not their first language. The ability to span disparities such as those occurring within culturally and linguistically diverse landscape of tertiary classrooms has been highlighted by many (e.g. Dongre, 2011; McConnell, 2014; Harvey, et al., 2012). The very collaborative nature of using photos in classrooms brings about a greater understanding for all students (Fanning, 2011).

Additionally, photos are found to assist students who are unfamiliar with local examples used by teachers, providing a valuable link between prior and new knowledge (Fanning, 2011; Power & Morgan, 2010). Deale (2014) observes that photos are pivotal in social change, and that developing a collective view can help overcome power, language and communicative barriers. He highlights it is important to hear the story behind photos. In addition, Johnson et al. (2011) emphasize that photos help "bridge students' conceptual, visual, and spatial thinking from the virtual to the real world" (p.509). Photos provide students with a concrete hook they could hang their knowledge on.

2.4.1.3 Evidence of learning

There are two reasons for using assessment: formative feedback which provides students with constructive feedback during the learning, and summative assessment, which provides an indication of learning (Biggs & Tang, 2007). Although there appears to be considerably less literature relating to photos within assessment specifically, suggesting a need for further research, there were some benefits noted (Munakata & Vaidya, 2012; Kurtz & Wood, 2014). Photographs used within presentations and photo-essay assessments are welcomed by students, and aid the reduction of fatigue (Fanning, 2011). Fanning used photo-essays as a way of assessing students' learning, asking students to produce a photo-essay rather than a more traditional 2000-word essay. Additionally, he looked at the use of photos within a written exam, reporting that students found them to be "a welcome break from the traditional essay" (p.185). He reports the inclusion of photos is especially useful for English as Additional Language (EAL) students, allowing them to become familiar with local examples relating to theory within exams.

Walter et al. (2012) describe their use of photos in two health-science course assignments. In the first assignment students uploaded photos into a sharing forum and reflected upon them. The second assignment required students to take photos, discuss them, then write their responses. They comment that assessments

encourage students to “perceive and capture via photographs both the positive and negative aspects of health and their environments” (p.386) and are useful forms of assessing students’ learning.

The use of photos for assessment was not without problems. Fanning (2011) offers some cautionary notes commenting that the use of photos was “not a destination but a journey” (p.187) requiring teachers to work towards interactive use of photos within classes. Likewise, Munakata and Vaidya (2011) report on the difficulty some students have in being able to accurately represent mathematical problems in assessment tasks. They asked students to capture images of mathematical problems around them and then assessed the photos. While students found it difficult to represent mathematical problems, they felt it gave them an awareness of the world not noticed before.

2.4.2 Issues

While there are multiple benefits put forward for using photos within tertiary classrooms, there are also issues needing to be acknowledged. However, there were few limitations discussed in the literature (e.g. McConnell, 2014; Power & Morgan, 2010; Munakata & Vaidya, 2012). The lack of discussion surrounding limitations is perhaps indicative of researchers’ bias. It could be argued that as planned, systematic use of photos is not widespread within tertiary classrooms, only those passionate about their use undergo research, resulting in bias. The literature does highlight some concerns which have been summarised into the subsequent four sections.

2.4.2.1 Time intensive

The most commonly occurring limitation centred on time required for planning when using photos, for both teacher and student (Das, 2012; Given, Opryshko, Julien, & Smith, 2011). Completing photo essay projects is time consuming and complicated, which can be problematic for both teacher and student (Deale, 2014). This highlights the need for clear project guidelines, which is a complex and time

consuming task. It should be acknowledged that any planning is time consuming, but nevertheless essential. Additionally, Deale (2014) emphasises the need for care to be taken when designing appropriate evaluation tools for photo assessment purposes, all of which takes time for the teacher.

Furthermore, it became apparent photos were not used in isolation. Learning does not happen simply by looking at a photo, rather it is the story behind the photo that often stimulates the learning. Photos cannot be used on their own, highlighting need for discussion and analysis to make meaning and establish relevance, which is a time-related factor that needs to be considered and planned for (Given et at. 2011).

2.4.2.2 Lack of engagement

Although engagement is listed as a benefit, throughout the literature it is apparent that photos do not appeal to all students. Taylor (2002) and Das (2012) discuss students' apprehension and self-consciousness with using photos and lack of engagement due to lack of expertise. Johnson et al. (2011) in their New Zealand based study, looked at responses of 400 students, concluding "not all students enjoy using technology as it challenges them to conceptualise new and different ways of learning" (p.509). They argue the need to encourage student engagement through more teacher professional development and training. They caution that for teachers to remain encouraged using photos, "there must be support for innovative e-learning pedagogy so that it is not considered a time-consuming 'add on' to lecturers' work, but is a valued component of tertiary teaching" (p.510). The less engaged students are with the use of photos, the less likely they are to be reflective and creative when using this tool (Walter et al., 2012).

2.4.2.3 Lack of knowledge

Increased visuals within our world are changing what it means to be literate. No longer is literacy just relating to the reading of texts; rather, it should now encapsulate the reading and use of visuals (Bleed, 2005). Although we live in an increasingly visual world, it does not automatically prepare us to be able to critically

engage with, reflect on, or use photos effectively, with growing literature highlighting the need for visual literacy (VL) standards within education. This calls for a focus on VL opens up discussion.

Recently, it appears progress has been made in defining VL. Bleed (2005), explored the emergence of, and need to integrate VL into universities' curriculums, reporting it was very difficult to define and required further research. Bleed offers up a definition of a visually literate person as one having the ability to "understand and produce visual messages",or being able to "interpret messages as well as generate images for communicating ideas and concepts" (p.5). This not only includes having the ability to decode and interpret, and encode and construct, but it includes having the ability to "visualize objects in the mind's eye" (Schönborn & Anderson, 2010, p.347).

Further definitions have been proposed, by Hattwig, Burgess, Bussert, and Medaille (2011, p.1):

> Visual literacy is a set of abilities that enables an individual to effectively find, interpret, evaluate, use, and create images and visual media. Visual literacy skills equip a learner to understand and analyze the contextual, cultural, ethical, aesthetic, intellectual, and technical components involved in the production and use of visual materials. A visually literate individual is both a critical consumer of visual media and a competent contributor to a body of shared knowledge and culture.

They further define the visually literate individual as having the ability to:

- Determine the nature and extent of the visual materials needed
- Find and access images and media effectively and efficiently
- Interpret and analyze the meanings of images and visual media
- Evaluate images and their sources
- Use images and visual media effectively
- Design and create meaningful images and visual media
- Understand many of the ethical, legal, social and economic issues surrounding the creation and use of images…

Hattwig, Bussert, Medaille, & Burgess (2013) in their report on visual literacy standards in higher education in USA highlight vast arrays of definitions of VL. They

suggest the most recent definitions "typically refer to an individual's ability to both analyze and produce visual materials" (p.63), highlighting there is an interpretive and productive component to VL.

Somewhat concerningly Rourke and O'Connor (2012) maintain many academics cannot agree upon a definition of VL skills or how these should be taught. They offer this lack of delineation as a reason it has been neglected in higher education. They propose it is indeed educators' responsibility to "develop students' comprehension skills of visual material just as we are committed to developing their verbal and written skills within the discipline" (p.212). Their assertion is that VL should be given the same impetus as other literacy skills. Using photos is a way of meeting this responsibility. There is need for teachers to have the necessary skills to design and develop pedagogically sound opportunities for their students to learn effectively, emphasising the need for teacher training (Duncan-Howell & Lee, 2007). Rourke and O'Connor (2012) concur recommending that it is vital for educators to develop the necessary skills for teaching in order for students to receive and understand visual information.

2.4.2.4 Ethical considerations

With the increased ability for photos to be shared in public forums ethics is undoubtedly an area of growing concern, although only a small number of apprehensions were recorded or discussed. There are inherent ethical complexities involved in taking and using photos of people, and how difficult it is to avoid revealing visual information about participants, which therefore required prior consent (Ruto-Korir & Lubbe-De Beer, 2012; Given et al., 2011). Hall (2009) deliberates challenges of taking photos which include people, commenting that taking photos of people without their consent is "an ethically questionable practice" (p.456). The potential increase in sharing of photos is an area of need for further reflection and research.

2.5 Gaps within the literature

Upon review of literature, it emerged there is limited literature on the use of photographs within tertiary classrooms as a teaching and learning tool, in particular New Zealand-based literature. There are few cross-discipline studies, and more noticeably there appears to be less literature specifically relating to the use of photos for assessment purposes. Furthermore, there is potential for greater understanding surrounding the need for teachers and students to become visually literate and the suggestion there is a need for a set of VL standards within our higher education institutes.

2.6 Conclusions

This chapter has presented theoretical aspects of teaching, learning and assessment and a summary of literature relevant to photo elicitation in order to add context to the research. Themes emerged relating to the perceived benefits of using photos within the tertiary context have been linked to social constructivist beliefs relating to education. Throughout the review of literature questions arose which have been noted within the final section of this chapter, along with some gaps within the literature. It is with the hope of filling some of these gaps that the current project was designed.

Chapter Three: Methodology

You don't make a photograph just with a camera. You bring to the act of photography all the pictures you have seen, the books you have read, the music you have heard, the people you have loved.
Ansel Adams

3.1 Introduction

This chapter outlines the methodology and methods employed to gain an understanding relating to the core research questions of this study. It begins by looking at the research paradigm and is followed by a description of the methodology framework and ethical considerations. An outline of the methods of data collection, and details surrounding the sample and research process, is then summarised. The final section of this chapter delineates the process involved with the analysis and reduction of data.

3.2 Research Paradigm

Paradigms refer to the world-view of researchers. Acknowledgement of the researcher's paradigm is part of the rigour required in qualitative research to ensure credibility. Hyett, Kenny and Dickson-Swift (2014) highlight the importance of researchers describing and acknowledging their paradigm to aid reader's understanding of the research. There are three components in a research approach: design of the research, philosophical worldview, and methods of data collection (Creswell, 2014). According to Giddings and Grant "[a] researcher's paradigm reflects their beliefs about what reality is (ontology), what counts as knowledge (epistemology), how one gains knowledge (methodology), and the values one holds (axiology)" (2006, p.4). These will be looked at in the following sections along with researcher's perspective and research context.

3.2.1 Research design

The nature of this study lent itself to a qualitative approach, as the aim was to explore a group of teachers' current practices and experiences. Qualitative research is concerned with exploring and understanding human behaviour. Emerging understandings arise from data gathered with the researcher's focus being to render the complexity of the situation (Robson, 2002).

3.2.2 Philosophical worldview

Participants' subjective views were placed at the centre of my research. An approach that accounted for this subjectivity was a constructive/interpretive approach, as it recognises subjectivity and unique individual experiences. Constructivism is a perspective relating to how realities are made, believing the individual creates understanding through experiences; meaning is constructed, not discovered (Cohen, Manion & Morrison, 2007; Charmaz, 2006). I wanted to gather data relating to a group of teachers' experiences of using photos, and their views associated with doing so. Constructivists contend reality is socially constructed through individual experiences, and is equated with qualitative methods (Grant & Giddings, 2002). To this end I started with the experiences of teachers and endeavoured to gain multiple perspectives, which was consistent with constructivist research.

3.2.3 Research Methods

Research methods chosen were uniform with my worldview. This study was largely concerned with the participants and a desire to understand their subjective views on experiences. Grant and Giddings (2002) assert that understanding and meaning is gained by interacting with the participants, therefore research methods such as interviews using open-ended questions, and observations are typically undertaken, as these methods allow the researcher to aquire multiple perspectives (Robson,

2002). Both text and images were analysed looking for themes and patterns to emerge, allowing interpretations to be made.

3.2.4 Researcher's Perspective

In order for interpretive approaches to be considered reliable, it is imperative researchers understand their position and make this explicitly clear in relation to the phenomenon being researched (Grant & Giddings, 2002). It is therefore acknowledged that I have an existing interest in photography in general, and the use of photos as a means of data collection within research (Haultain, 2013). In addition, as a teacher trainer, I have a keen interest in teaching quality. Robson (2002) explains biases include assumptions and preconceptions researchers bring into research settings. I therefore acknowledging my subjectivity, which may in some way impact on the outcomes of the research. Additionally, as I was researching colleagues it was important to mitigate any apprehension of being judged, which was achieved by participants' voluntary involvement, and the assurance that the purpose was exploratory. It was my intention to remain open to what arose from the research, rather than letting my views shape the investigation.

3.2.5 Research Context

This research was conducted in a large ITP in New Zealand. The research was organised based on ease of access to participants with the agreement of the ITP. This allowed the opportunity to access participants in the various stages and permitted the observation programme to be spread over a period of time to meet the convenience of participants. In order to gain a cross-discipline perspective, participants were sought from a variety of teaching centres.

3.3 Methodology

A methodology is the framework within which a research study has been conducted, either consciously or unconsciously. Explicitly articulating the methodology gives

insight into the implications for the research and the particular research method used, and allows the reader the opportunity to understand "the theoretical, political and philosophical backgrounds" to the research (Robson, 2002, p.549).

3.3.1 Qualitative Interpretive Research

The methodological framework used was based on a qualitative/interpretive approach drawing from grounded theory methodology, where insights were derived which were grounded in the views of the participants.

Qualitative research relates to research that assumes "knowledge is relative, that there is a subjective element to all knowledge and research, and that holistic, ungeneralisable studies are justifiable" (Nunan, 1992, p.3). While all research aims to derive meaning from data, qualitative research does so by gathering data from multiple sources, and by evaluating any number of variables. There are key factors involved in qualitative research, which can be seen within this study.

- The design strategies employed consisted of naturalistic inquiry; data collected was naturally occurring and had not been contrived (Robson, 2002).
- There was flexibility in the design; there was an openess and manipulability to the design which ensured new paths could be explored as they emerged (Patton, 2002).
- Data collected during interviews and observations consisted of words and photos (Bogdan & Knopp Biklen, 2007).
- Data collected was concerned with personal experience and acknowledged the contribution my own experiences made to understanding of the phenomenon (Patton, 2002).
- Strategies and procedures were in place ensuring the participants' perspectives were captured and portrayed (Bogdan & Knopp Biklen, 2007).

Interpretive studies set out to explore issues. Interpretivist researchers place participants at the centre of the research and rely on their views, while recognising

the influence of their own background and experiences (Creswell, 2014). While generally not beginning with theory, interpretive research generates meaning which is grounded in people's experiences, consistent with qualitative methods of research. Likewise, grounded theory is about giving a voice to participants, assisting the researcher to view data in a kaleidoscope of ways, encouraging involvement, and the exploration of data. Grounded theories encourage an open-ended approach and yet still encourage rigour throughout the data collection and analysis stages of research; "Like a camera with many lenses, first you view a broad sweep of the landscape. Subsequently, you change your lens several times to bring scenes closer into view" (Charmaz, 2006, p.14).

3.4 Ethical considerations

It was imperative to consider ethical issues to ensure no harm was caused towards any persons involved in the study. When starting a research project, consideration must be given to the rules of conducting research. Plans for the research must be reviewed by the institution's ethic committee, ensuring the researcher has assessed potential for risk, and vulnerability of participants considered (Creswell, 2014). Amongst many areas to be considered, participants need to be aware of their right to take part or not, their right to anonymity, their confidentiality, their responsibilities, the responsibilities of the researcher, the methods of data collection, and what happens to the data once no longer required. Ethical conduct requires no participant should feel stressed, misled or anxious throughout the project (Creswell, 2014; Robson, 2002). The following sections look at issues addressed when planning this research study.

3.4.1 Ethics approval

An application for ethical approval was submitted to Massey University Human Ethics Committee (MUHEC), which was subsequently granted on 24 June 2015 (*Appendix 1*). The research was considered to be 'Low Risk' however, as it was

conducted at a second tertiary institute, secondary ethical approval was sought and approved on 13 July 2015. This ensured both institutions were fully informed.

3.4.2 Measures to maintain ethical standards

Participation within this study was voluntary and informed. Participants were provided with information letters outlining the project, methods of data collection and their rights *(Appendix 2a*). Consent forms were provided and signed, consenting to participation before data collection processes began *(Appendix 3a*). Students within participants' classes were also provided with information forms *(Appendix 2b)* and asked to sign their consent *(Appendix 3b*). All participants were informed that the data would contribute to this Master thesis and data may be included in future publications or presentations. To ensure security of data collected, all data was stored in password-protected electronic files and hard copy data was stored securely at all times.

Best efforts were made to ensure confidentiality of participants was maintained through the use of pseudonyms and non-identification of the ITP. As photographs were taken, all participants were informed beforehand these would be taken throughout observations, which may impact on confidentiality. Anonymity would be applied by obscuring identifying faces.

It was important to ensure participants had control over the extent, timing and circumstances surrounding their sharing of information, and the right of individuals to limit identifying information. Participants were informed of prospective methods of dissemination of data which may impact on their privacy. In addition, interview and observations were conducted at times that best suited the participants.

3.5 Data gathering tools

Consistent with qualitative research, this study gathered data from multiple sources. Table 3.1 below illustrates the data collected in relation to research questions.

Table 3.1: Mapping research question against the data source

Mapping research question against data source	
Source of evidence	**Research question**
Survey	1. In what ways are photos currently used within the tertiary classroom in order to aid teaching, learning and assessment? 2. How can photos be utilized further in order to assist students' engagement and knowledge development?
Teacher interviews	1. In what ways are photos currently used within the tertiary classroom in order to aid teaching, learning and assessment? 2. How can photos be utilized further in order to assist students' engagement and knowledge development?
Classroom observations	1. In what ways are photos currently used within the tertiary classroom in order to aid teaching, learning and assessment?
Student Feedback	1. In what ways are photos currently used within the tertiary classroom in order to aid teaching, learning and assessment?

A range of approaches were used to gain triangulation. Triangulation of data is important to ensure reliability of data gathered, by establishing themes based upon a number of differing sources (Creswell, 2014). Triangulation can be defined as the collection of data from two or more sources, enabling the researcher to be more confident the data is valid (Cohen et al., 2007). Using one source of information can support another, for example aspects arising in the interview can be then be seen in action during the class, and students' perspectives can also be gained. For the purpose of this research, data was gathered from a range of sources allowing for triangulation through member checking (Figure 3.1).

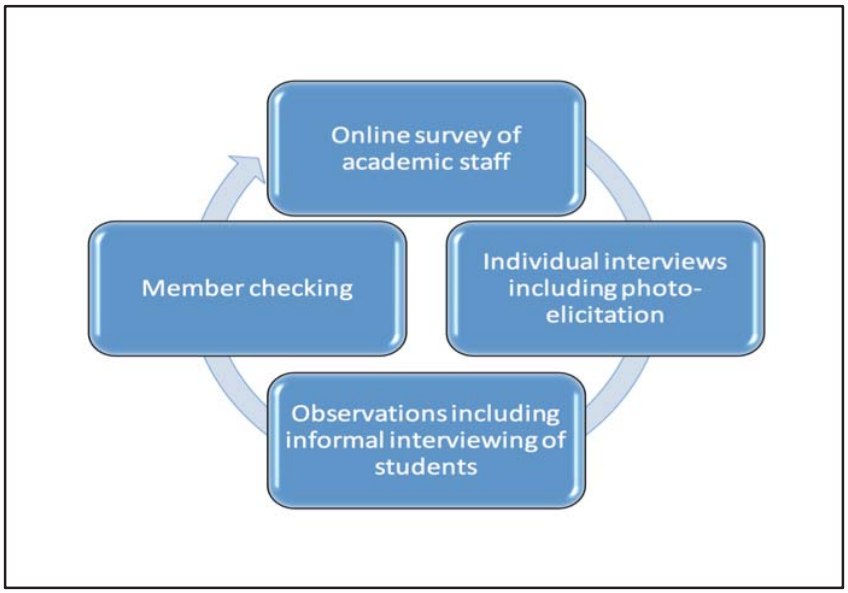

Figure 3.1: Triangulation of data

3.5.1 Survey

Descriptive surveys can collect large amounts of data and are one of the most popular descriptive methods of research in the education field (Nunan, 1992). Surveys are seen as a convienient way to collect data, at a low cost and within a short amount of time (Creswell, 2014). Contary to this is the view that data from surveys can be misleading as a result of disinterested responses of survey respondants, with potential for ambiguities and misunderstandings which may impact on the reliability and validity of surveys (Robson, 2002). This highlighted the need for care to be taken with the design of the survey.

An online survey was conducted to gain a wide snapshot of use of photos within the ITP. The survey was created using Qualtrics Online Survey Software and Insight Platform. Care was taken with the creation of the survey to ensure language was kept simple, unambiguous, and to avoid leading questions (Robson, 2002). The survey comprised 23 questions, made up of a variety of question types such as dichotomous questions used to gather background information, multiple choice questions which allowed respondents to select more than one option from a list,

scaled questions used to measure respondents' attitudes and opinions, and open-ended survey questions which required respondents to type their answers into a comment box (Trochim, 2006). In addition filter questions were used as suggested by Trochim, redirecting respondents to the next applicable question to ensure they did not have to answer non-relevant questions (*Appendix 4*). The survey was piloted prior to being emailed out.

3.5.2 Semi-structured interviews

Interviews are described as guided conversations allowing for exploration of a particular topic or experience (Charmaz, 2006). Semi-structured interviews are useful tools when trying to gain understanding about people's views and thoughts on a particular subject, giving interviewers scope to add more questions throughout the interview, providing flexibility (Robson, 2002; Nunan, 1992). They permit interviewers to go beneath the surface, request more detail from respondents, and to go back to earlier points, to gather more data. They additionally permit researchers to use observation skills to further discussion (Charmaz, 2006). For the purpose of these semi-structured interviews, an interview guide was used to direct interviews (*Appendix 5*). Using a semi-structured approach, I was able to customise the interview in view of information gathered, demonstrating the flexibility of this method.

3.5.2.1 Photo elicitation

Consistent with the focus of this study, photos were used as part of the interviews in order to gather data. The use of photos as a form of data collection may produce useful data and shed light on aspects not already discussed, helping the formation of understanding and sharing of emotions, while breaking down barriers between researcher and participants (Harper, 2003). The building of rapport between researcher and participant is vital to gather rich data (Charmaz, 2006). Participants were asked to bring to the interview a sample of photos they had used as a teaching and learning tool.

3.5.3 Observation

Observations of participants' classes were planned to gain an insight into their current use of photos within the classroom. Observations are useful when the prime motive is to explore what is happening in a situation, allowing researchers to have, and record, a first-hand experience (Creswell, 2014). Observations allow for the chronicling of individual and collective actions, permitting the documenting of detailed notes and anecdotes, placed within a relevant context (Charmaz, 2006).

There are cautionary notes to be considered when using observations. It is important not to use observations as a means of confirming pre-conceived ideas, and consideration must be given to the researcher's role as it is important that the researcher not be intrusive (Creswell, 2014). In response to this, an informal observation approach was planned where-by I intended to take on an 'observer-as-a-researcher' role. The flexible, interactive classes invited this type of observation and would allow me to normalise myself as an observer.

3.6 Process of research

The steps taken within the research did not occur in an orderly, linear progression. The following section endeavours to outline the process of data gathering and analysis of data employed for this research project visually (Figure 3.2).

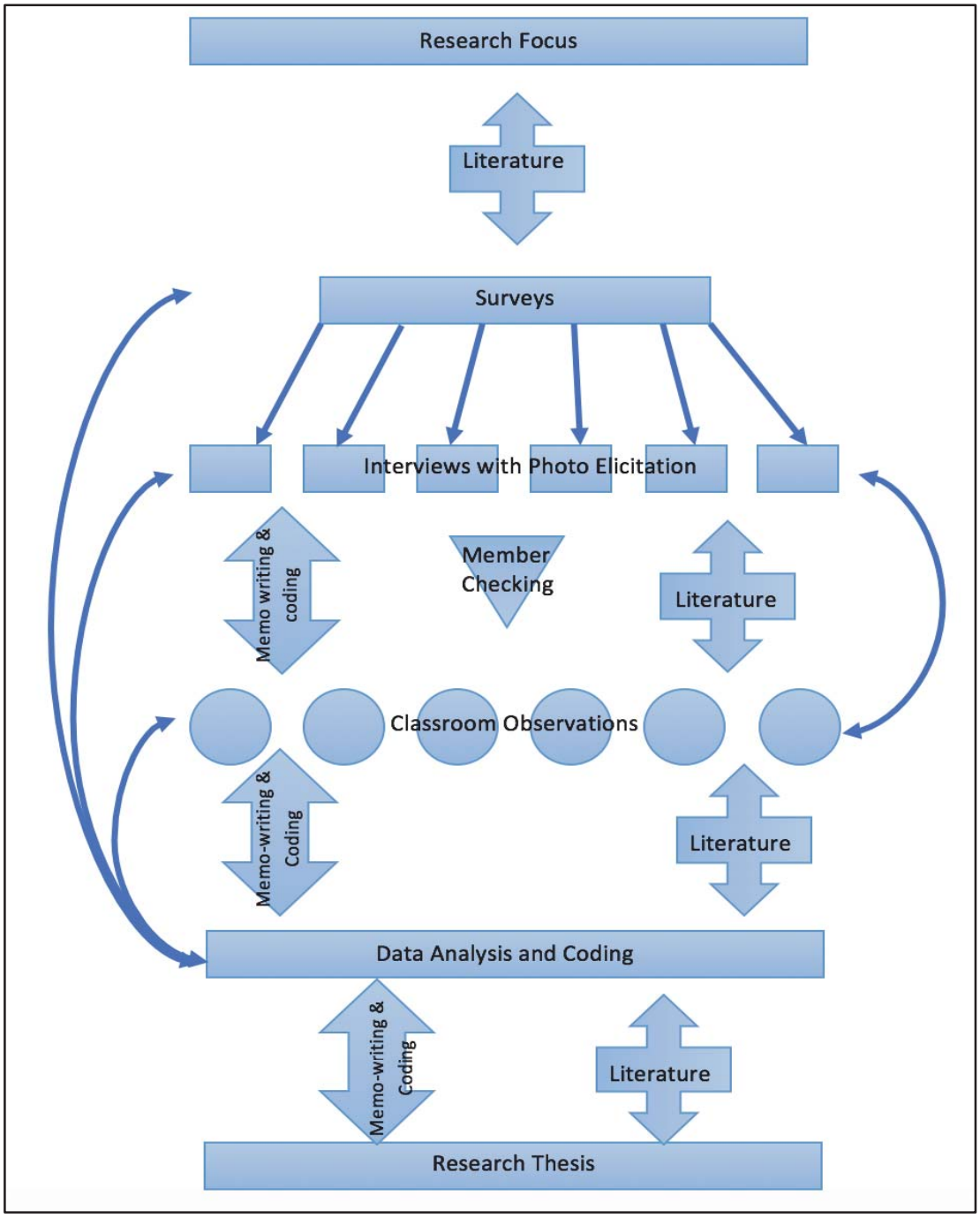

Figure 3.2: Diagram of overall research design.

3.6.1 Survey

The strategy for sampling of the survey was cluster sampling, which focuses on a particular group from within a wider population (Nunan, 1992). Cluster sampling is useful when there is a range of possible respondents which the researcher does not have direct access to (Creswell, 2014). The process of gathering data started with a

survey. Research leaders from each educational centre within the ITP were asked to distribute the online survey and accompanying introduction letter to academic staff within their respective schools/centres. Academic staff were given a three-week time frame to complete the survey. At completion of this time period, there were 31 responses from seven of the ten Schools or Centres. Twelve survey respondents indicated willingness to be involved in the research. They were contacted via email, and particulars of the research outlined in detail. As a result, five participants indicated their willingness take part further.

3.6.2 Sampling

Following the first two interviews, it was decided to invite a further staff member to be the sixth study participant, as this staff member's name was mentioned by the first two teachers. This is a form of snowballing, whereby participants are identified as a result of networking or when the researcher identifies potential participants from within the intended population area (Robson, 2002). Figure 3.3 outlines the six study participants under their pseudonyms using illustrations drawn by myself to depicit their field of expertise and to personalise them and their stories for the purpose of this thesis.

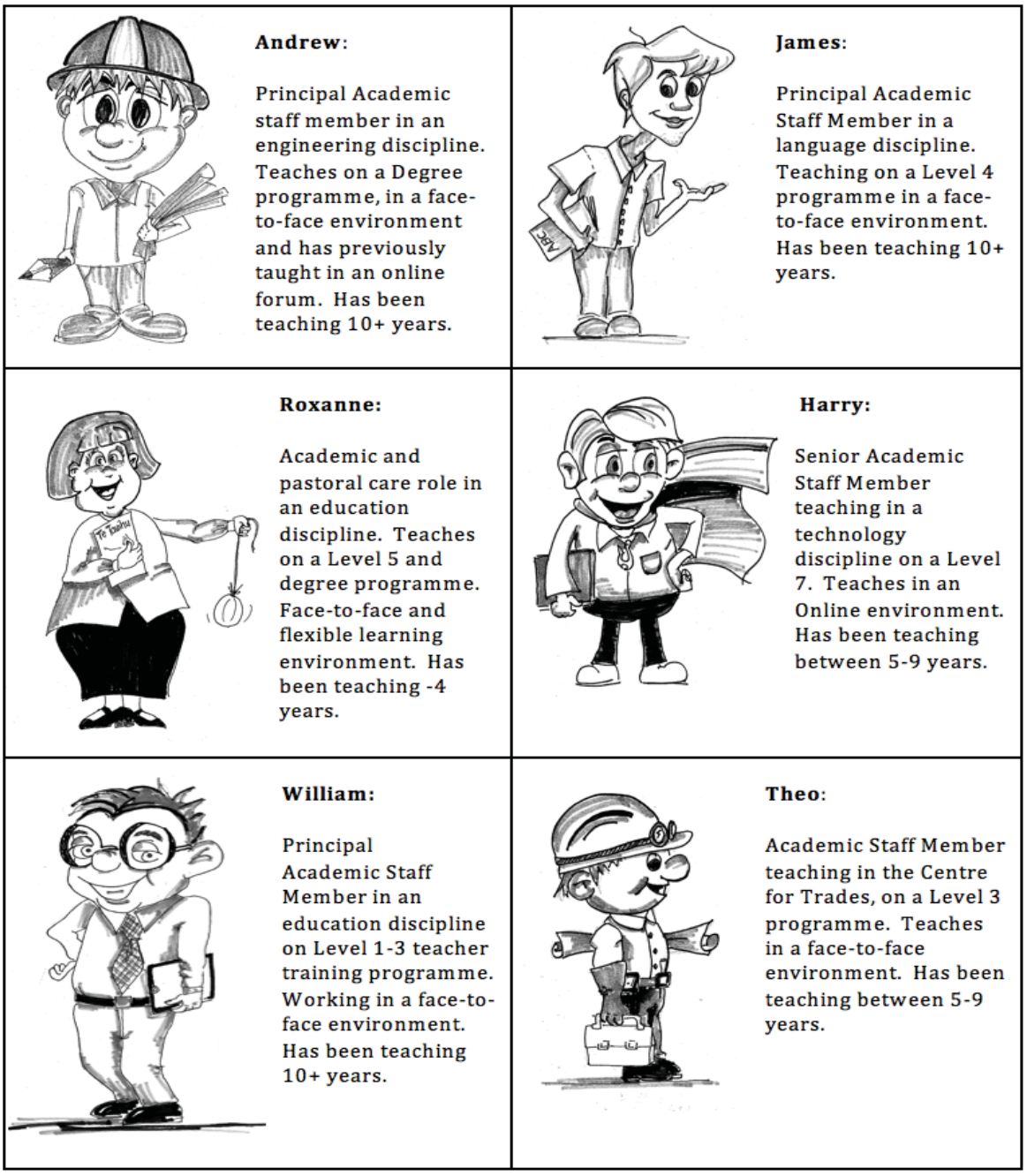

Figure 3.3: Study participants

3.6.3 Interviews

Individual interviews were conducted to gather rich data. I met with each teacher, at a mutually agreed upon location and time, using the interview schedule as a guide. As part of the interview, teachers were asked to bring along examples of photos they used and discuss how they were used and what the responses to them

were. It is believed photos often hold untold stories which can provide many insights that are essential for understanding (Strickland, Keat, & Marinak, 2010). Interviews were recorded. Recording of the interview allowed me to concentrate on the interview and interviewee, allowing for data to be reanalysed after the event (Nunan, 1992; Robson, 2002).

3.6.4 Observations

Times were made for classroom observations, which suited teachers. A minimum of two observations per teacher were carried out, with the exception of William who had a change of role during the data collection period, allowing for only one observation. Students within classes were made aware of the purpose of the observation. They signed consent for observations to occur, for photos to be taken, and for clarification questions to be asked, to gain different perspectives (*Appendix 3b)*. Care was taken not to interfere with classes.

Field notes were written on an iPad using a narrative style of recording (Figure 3.4). Photos were taken throughout observations as a form of evidence and to aid recall of events. Observations were summarised on a single sheet as soon as possible after the observation, as suggested by Robson (2002). Themes that arose were later coded as per the interviews.

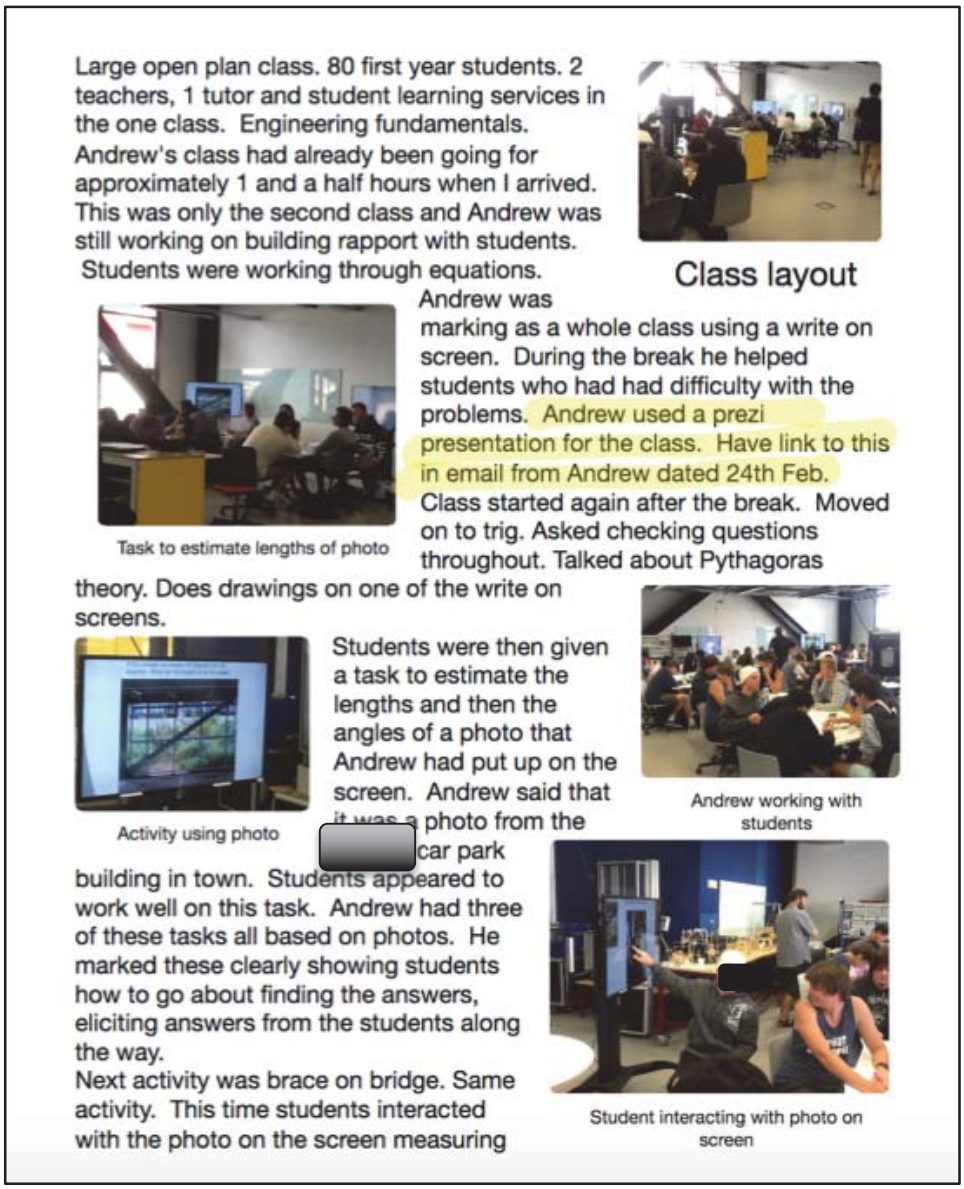

Figure 3.4: Example of observation narrative

In the case of the online teacher, following approval from students in the Module, the teacher enrolled me in the online forum, and interaction of the class was 'observed' for a period of two weeks, with screenshots of online activity being taken rather than photos (Figure 3.5).

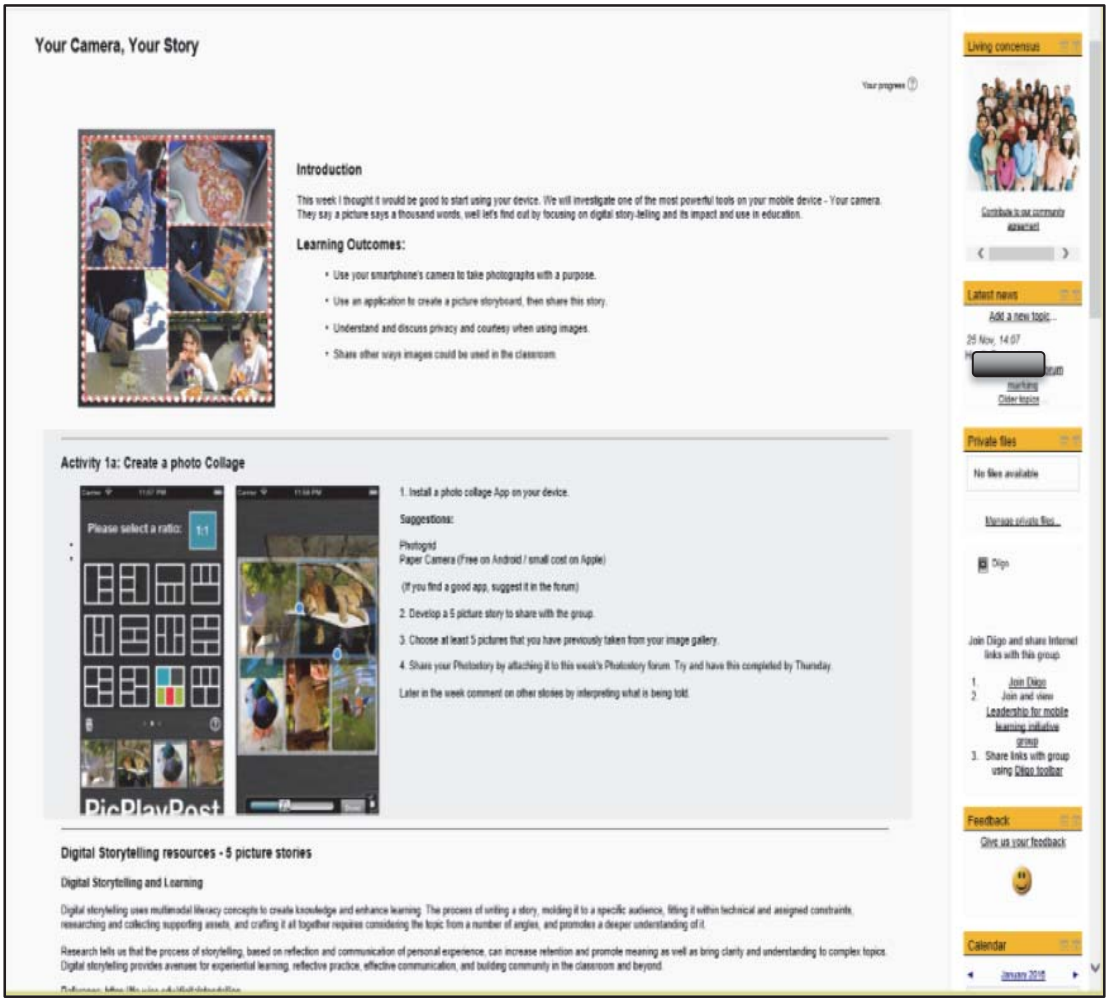

Figure 3.5: Online observation screenshot

3.7 Analysis of data

In keeping with grounded theory, data analysis occurred throughout the data collection process. Immersion in data resulted in discovery of patterns, themes, and interrelationships meaning that resulting categories were 'grounded' in data (Charmaz, 2006). While immersing myself in data I went backwards and forwards between stages of analysis, meaning analysis did not occur in a linear fashion. It is believed the moving backwards and forwards between data is useful for stopping researchers feeling overwhelmed.

3.7.1 Memo-writing and coding

Memo-writing and coding was the first step in my data analysis. Immediately following the interviews I made notes of initial thoughts in a method similar to early memo-writing, described by Charmaz (2006) as a pivotal step in grounded theory analysis. Interviews were then listened to soon after and notes taken to capture thoughts. By stopping and writing memos Charmaz contends "it prompts you to analyze your data and codes early in the research process" (p.72). This was particualry important as there was a period of time between interviews and transcription of recordings. In doing this I was able to capture preliminary views, which helped me crystalize further questions and led to new insights. In addition I drew a visual representations of initial thoughts, which looked holistically at each person, allowing me to compare and contrast, giving me a 'big picture' of differences and simliarities (Figure 3.6).

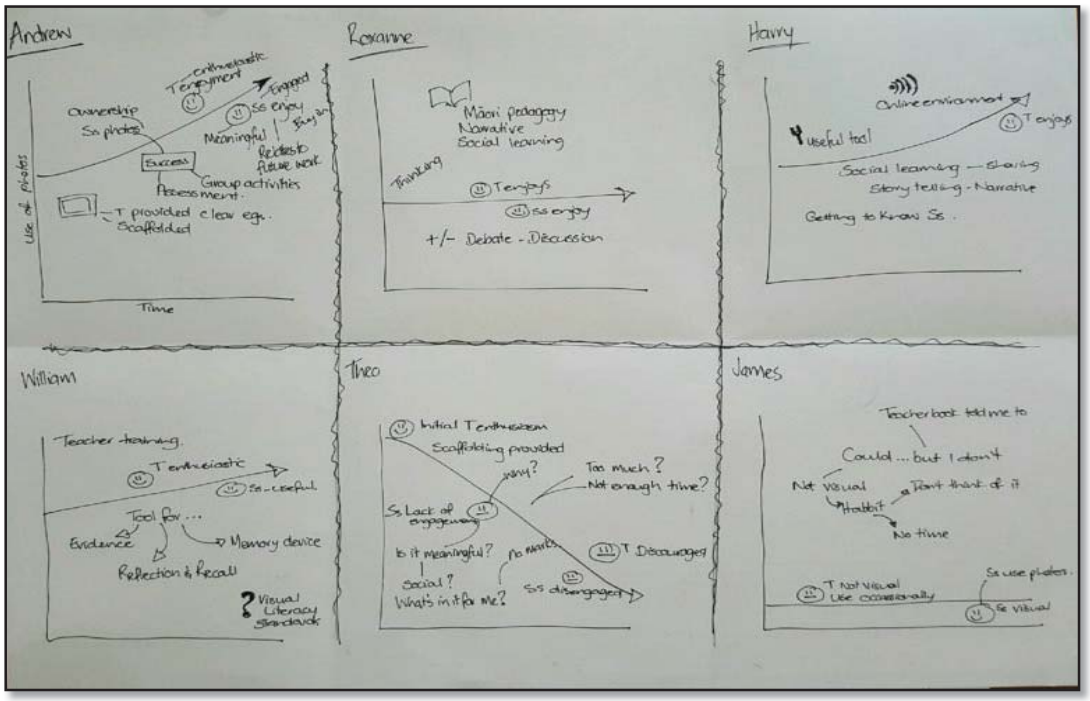

Figure 3.6: Comparison of initial thoughts and key ideas

I transcribed interviews in full at a later date, sending transcripts to each participant to ensure they were a true representation of the interview, before analysis of data was carried out. Transcripts and observation notes were then coded into reccuring

themes. The process of coding full transcripts involved selecting, sorting and separating data, giving me a greater depth of understanding. Charmaz, (2006) remarks that "coding is the pivotal link between collecting data and developing an emergent theory to explain these data" (p.46). Coding is the process of defining what the data is about. Codes emerged and developed through the multi-leveled stages of my analysis.

Throughout the initial analysis stage I used visual strategies, in the form of coloured highlighters, to start coding thoughts within memos I had written, and later within transcripts of interviews and observations (Figure 3.7). My preliminary memos generated initial codes, helping clarification of what was happening. I then grouped some of these into tentative categories, which moved codes into more analytical concepts. Categories facilitated clarification of ideas and processes, incorporating common themes and patterns, and allowed me to look at relationships between the categories.

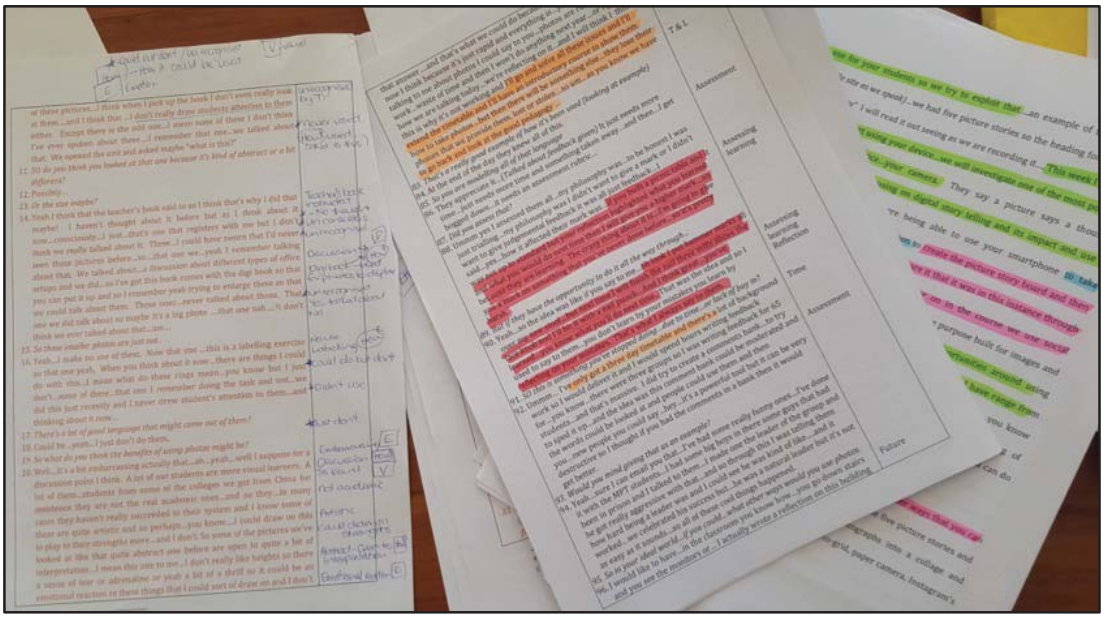

Figure 3.7: Example of focused coding of transcript

Throughout this process there was continual comparison of data in a manner similar to the 'Constant Comparative Method' as outlined by Maykut and Morehouse (1994) whereby data is compared with data. Data was displayed in a conceptually clustered

matrix whereby it was arranged to bring together corresponding themes, to be able to access information for exploring and describing (Robson, 2002).

3.7.2 Data reduction and display:

Grounded theory consists of an initial coding of the data followed by focused coding, where the most suitable codes are selected (Charmaz, 2006). Each teacher's transcript was re-read and analysed with key words recorded in a form of 'focused coding'. These key words were chronicled in tables, and were contrasted between transcripts. Charmaz asserts the strength of grounded theory coding is that there is an active involvement in the process, rather than passively reading data. Focused coding helps to keep preconceptions in check stating "events, interactions, and perspectives come into analytical purview that you had not thought of before" (Charmaz, 2006, p.59). Table 3.2 displays initial codes and categories used.

Table3.2: Emerging codes

Original Codes/themes		Categories	Examples of key words/phrases
Codes	**Huakina: Opening the door to learning**		
V	Visual	Motivating students	Motivating, enjoyment, encouraged, emotional engagement, interesting, visual learners, effective, efficient, artistic, evoke emotions, telling stories, the power of the image, engagement, discussion, debate
E	Emotional		
Eng	Engagement		
Int	Interest	Building relationships	Personal connection, discussion point, sense of ownership, build relationships, social interaction, collaboration, learning from each other, Ako, affirmations from others
P	Powerful		
☺	Student enjoyment		
SP	Shared power	Building confidence	Confidence builder, sense of belonging, validate students work, ownership of own goals, storytelling, narrative
C	Collaborative		
Narra	Narrative		
Own	Ownership	Building knowledge	Setting the scene, bridge gaps, capture things difficult to talk about, link theory to practice, stimulate thought, bridge diverse learners, build understanding
I T&L	Improve teaching and learning		
ST	Stimulate thought		
M	Maori teaching pedagogy	Linking to the real world	Real world, relevance, something solid, linking to prior understanding, relatable, link to feelings and experiences, meaningful, shared learning,
BG	Bridging gaps		
RL	Real life		
M	Meaningful	Capturing key moments	Captured, caught , a telling photo, capture a sequence of events
AW	Awareness raising		
R	Reflection		
MD	Memory device	Assessment	Evidence, memory device, awareness raising, stages, sequencing, assessment criteria, learning outcomes, see what they have done
Seq	Sequence stages		
Ass	Assessment		
Codes	**Limitations**		
A	Aural learners	Lack of buy-in	Not visual, but not enough students do it, but no, no buy-in, I haven't thought about it
SM	Staff moral		
Hab	Habitual	Lack of knowledge	I don't think it's done consistently, it's to do with the teacher's ability, I don't think they realise, not enough understanding
-VL	Lack of Visual Literacy		
-K	Lack of knowledge	Time restraints	You don't always have time to make the best resources, there's no time, everything is crammed, huge amount of material in course, needs more time
T	Lack of Time		
PU	Prior use	Sourcing photos	Hard to find good photos, I took a lot of photos, copyright, that the photo does the purpose that you want it to
Eth	Ethics		
TP/SP	T or S photos	Technology	Everything is instant, access phones, a memory problem, lack of access
S-	Source		
T & L	Teaching and learning		
BI	T & S buy in	**Future use**	
Tech	Technology	Ideas for the future	They could be, photo essays, reflection, digital stories, specific pre-training,

Following focused coding, themes were pulled out and sorted into a table with participant's key words being placed under each theme. While doing this new themes emerged and excerpts from transcripts were then placed under headings in a table format. These were further highlighted with significant words and themes emerging. Throughout the process memo-writing continued to be pivotal to my analysis and reduction of data. When I was able to portray ideas on paper, I was better able to 'see' the ways in which ideas linked or contrasted (Figure 3.8).

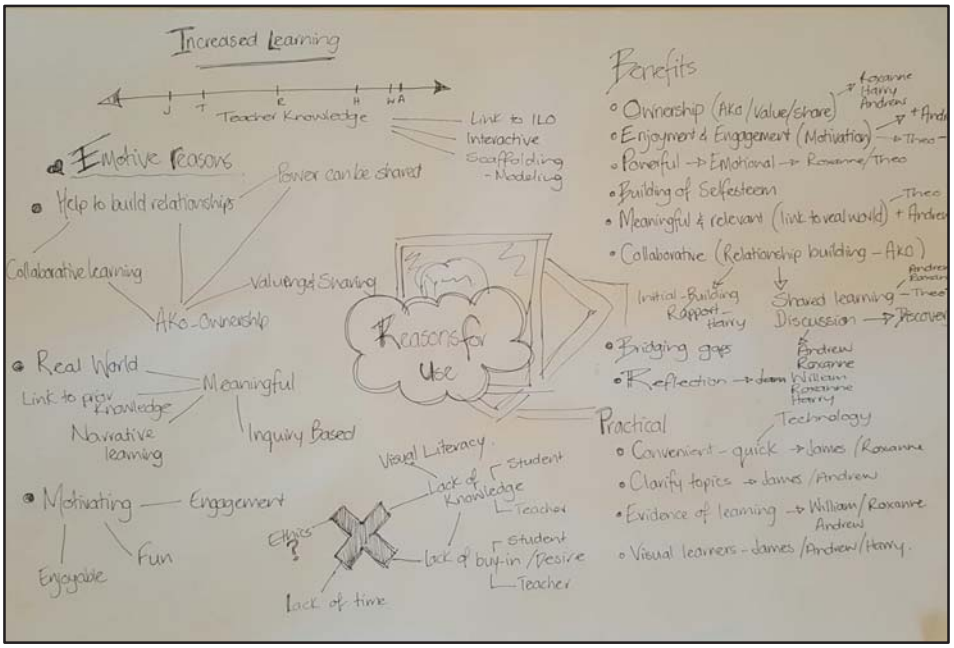

Figure 3.8: Example of memo writing

The whole process was revisited and reworked many times to ensure themes were consistent, with the aim of having a fresh perspective of the data. The use of colour aided in identifying each participant, which allowed for easy identification of the participants. It was this final set of themes that has been the basis of the Findings Chapter of this Thesis (Figure 3.9).

Huakina – Using photos to open the door		
Motivation	Visually appealing/visual learners	(W.28) (J.20, 24*, 50*, 54) (A.78, 80) (T.28) (H.42, 44, 92)
	Creativity	
	Acknowledge success	(W.76) (A.40) (T.28, 40) (H.50)
	Meaningful /Powerful/emotional	(W.106) (T.98*)
	Motivating /Engagement/stimulate interest	(R.20, 38, 50, 78) (J.20*, 50, 108) (H.70, 122) (W.74) (R.40, 76) (J.40) (A.26, 30, 34, 46) (T.38, 40)
Relationships	Collaboration	(W.12, 50,) (R.14, 16, 42) (T.104, 106) (H.9, 40, 50, 114, 118, 120)
	Relationship building/rapport	(W.18, 34, 54) (R.14, 32, 40, 44, 60) (J.108) (A.28, 30, 48, 50) (T.38) (H.8, 9, 46, 50, 52, 56)
	Encouraging ownership	(W.50) (R.38, 40, 42) (J.44*, 108) (A.32, 40) (H.62)
	Sharing knowledge/feelings	(W.18, 40, 70) (R.12, 14, 20) (H.8, 9, 52, 64, 114, 120)
	Narrative sharing - Whakarongo	(W.24)(R.38, 44, 60, 62, 66) (H.8, 14, 50, 118)
	Discussion/debate	(W.76) (R.12, 26, 28, 30) (J.10, 20*, 22*, 30, 32, 50*, 50,70, 108) (A.50, 54*, 58) (T.98*) (H.40, 118, 120)
	Tohungatanga - Ako	(R.16)
Knowledge	Teacher knowledge (technology & ethics)	(W.14, 42) (R.40, 42, 66) (A.22) (T.32, 48, 110) (H.8, 86, 94, 114)
	Technology convenience	(W.14, 18, 22,40) (J.8, 16) (H.8,)
	Awareness raising	(W.28, 70) (T.78)
	Improve teaching	(W.28)
	Linking practice to theory	(W.28) (A.10, 42, 44, 46) (T.64, 106) (H.98)
	Knowledge building	(W.40, 54, 70) (R.14, 60) (J.16) (A.74) (T.32)
	Explain concepts/words	(W.72, 96) (J.8, 10, 16, 88*) (A.36, 44, 72, 80) (T.78, 112) (H.14)
	Promote critical thinking/ thought	(W.68) (R.24, 26, 28, 30) (T.30, 54, 106) (H.82, 118)
	Cultural diversity	(R.24) (H.52, 116)
	Consolidate learning	(R.32, 62) (J.88*) (A.10, 48, 50) (T.120) (H.28)
Real life	Relate to real world	(W.32) (J.54, 110) (A.8, 10, 12, 26, 50) (H.8, 98)
	Using familiar forums - Facebook	(R.12) (T.50) (H.8)
	Real experiences	(R.14, 50) (T.64) (H.122)
	Bringing real world into the classroom	(R.20, 32) (J.30, 68, 108) (A.34, 42, 58)
	Linking feelings to experiences	(R.20)
	Link to employment	(R.54, 56) (A.8, 18) (T.28, 64) (H.98)
Assessment	Reflection	(W.10, 18, 38, 68) (R.12, 20, 38) (A.38) (T.88)
	Recall	(W.10, 18, 34, 38) (R.20) (A.38, 72) (H.58)
	Evidence / Assessment	(W.10, 12,14, 28, 34, 50, 54, 56, 70, 82, 84) (R.14, 50, 56) (A.12, 18, 28, 30, 32, 38, 62, 72) (T.30, 42, 64, 90, 98*, 124) (H.28, 68, 72, 82, 98, 108), 116
	Telling photos/ Draw attention	(W.14, 24, 68)
*= Acknowledged benefit but not used		

Figure 3.9: Excerpt of themes and participant colour-coding

3.8 Validity

Validity is concerned with ensuring the findings of the research are about what they are being portrayed as (Robson, 2002). Efforts were made to ensure the research was valid through the following methods. Member checking involves presenting materials, such as the transcripts of the interviews and the interpretations of the data gathered, to the participants to help guard against researcher bias and to demonstrate that their views are valued (Robson, 2002). Member checking is a form of triangulation and provides a means of accuracy to be determined. This was carried out when transcripts were emailed to all participants asking for feedback and to confirm they were accurate records. Member checking is useful in providing further discussion and suggested improvements from the participants (Stake, 1995),

although in this case responses given did not provide any suggestions for improvement but provided confirmation of material discussed.

In addition, by ensuring triangulation of data, validity of the findings was enhanced (Robson, 2002). Triangulation can be achieved in a number of ways. For this study, *methodological triangulation* of data was achieved by the use of more than one method of data collection (survey, interviews, and observations). There was *triangulation of data* sources (teachers, students, observers) and an *investigator triangulation* whereby the review and discussion that occurred between myself and my supervisors provided numerous interpretations to be considered, which contributed to internal validity (Bryman, 2008).

Although this study was restricted to one particular context, it does not preclude some kind of generalisability beyond this context. Generalisability refers to the extent for which the findings are applicable outside of the research case (Robson, 2002). It was my intention to provide sufficient detail and description of the data and context to allow the reader to determine the value of findings for other contexts. Sampling methods employed in this research aided generalisability, as I did not exclude anyone from the research who may have had a different perspective safeguarding that my account was not biased.

3.9 Conclusion

This study is situated within a constructivist, grounded theory approach. A qualitative approach was adopted, allowing for exploration of current uses of photos as a tertiary teaching and learning tool within a range of disciplines. Multiple sources of data and data gathering methods were used. This chapter has outlined methodological rational underpinning the research, ethical considerations, and methods of data gathering, processes and methods of analysis, and validity of the research. The resulting findings can be found in the succeeding chapter.

Chapter Four: Findings

To the complaint, 'There are no people in these photographs,' I respond, there are always two people: the photographer and the viewer.
Ansel Adams

4.1 Introduction

This chapter presents findings, which have been compiled following analysis of the data as outlined in Chapter Three. The chapter begins with an outline of the more detailed information drawn from the interview and observations, under three broad themes: benefits of using photos, limitations of photos, and ideas for future use. Findings are evidenced with quotes from teachers and students, and supported with photos as evidence. The chapter concludes with a summary of key findings.

This study is set in a New Zealand ITP with over 20, 000 full and part-time students, and over 500 staff. The study started with the online survey followed by interviews and observations of six staff members who indicated their willingness to participate. They were given pseudonyms: Andrew, James, William, Theo, Harry, and Roxanne. Teachers came from a range of teaching departments and environments, and their current use of photos was explored. The major themes that emerged from data analysis are explained in the next sections.

4.1 Survey findings

Survey responses were received from 31 academic staff members, across seven of ten centres. Among respondents, 87% reported to use photos while teaching at least some of the time. The principle reasons for using photos were to add context, gain insights into students' thinking, to capture key moments, and to use photos for discussion. In addition, photos were perceived as being beneficial in increasing

students' engagement in the learning process by encouraging conjecture as one respondent wrote:

> *They [students] must use inference and personal connection to draw meaning from the image.*

Photos were sourced from a range of resources, with 80% of respondents using their own photos, 52% using students' photos, and 76% using photos from other sources. When respondents were choosing photos care was taken surrounding their clarity and appropriateness, cultural awareness, and copyright considerations. Although 65% of respondents thought students enjoyed their use of teacher-sourced photos, only 48% indicated they used them regularly. Predominant reasons cited for not using photos were: no perceived benefit in doing so; teachers' lack of knowledge surrounding benefits of using photos; and a lack of time.

Within assessments, the main use of photos was for evidence of learning, however teachers highlighted that students need to be aware of why they were using photos in order for them to be effective academically. Sixty-one percent of respondents indicated they had some apprehensions about students' ability to use photos for learning. Concerns raised related to students' knowledge of copyright and ethical issues; technological knowhow; and the students' ability to be able to critically reflect using photos.

Of particular interest, in an ITP that has a multi-ethnic clientele including a large Māori cohort, was that cultural beliefs around images need to be taken into account. Cultural awareness is not only a concern for students, but crucial for teachers in today's multiethnic world.

> *The only concern is about whether cultural aspects have been considered. Also whether cultural concepts have been considered in terms of placement of photos in a classroom environment and whether appropriate rituals have been undertaken e.g. Placing photos of people who have passed away with those that are living; making sure there is no food around photos of the deceased, making sure karakia have been done where necessary.*

Cultural concerns highlighted an emphasis for teachers to be aware of cultural norms in relation to use of photos, which is indicative of the bicultural sensitivity fostered within the ITP.

4.3 Findings from interviews and observations

The following sections outline data collected from teachers during the interviews and observations. The first section investigates different sources of photos used, while the second section looks at reasons photos were used. The third section outlines limitations experienced, while the fourth section discusses some suggestions for future (Figure 4.1). Throughout, three vignettes are shared providing additional discussion.

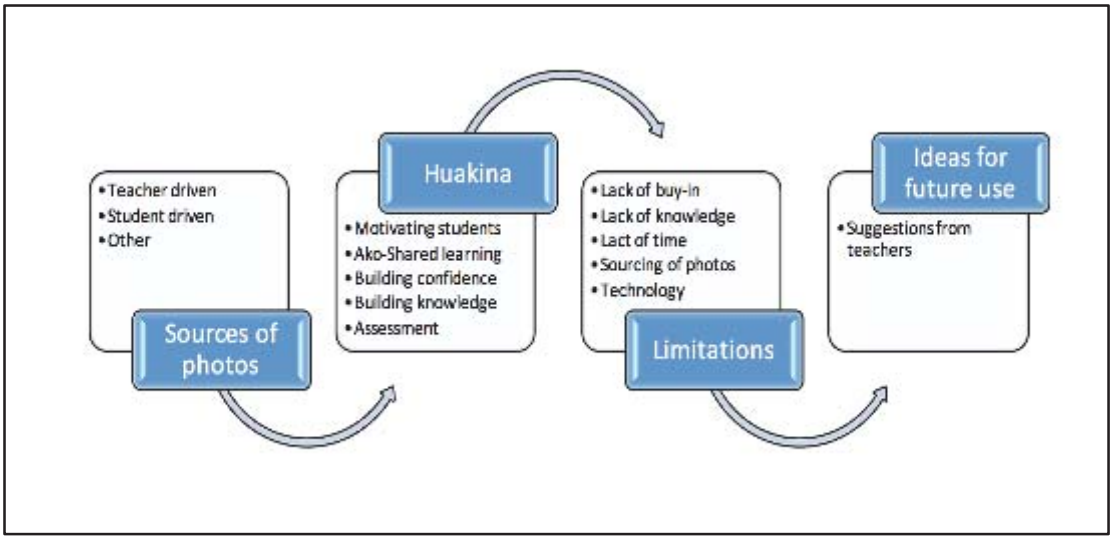

Figure 4.1: Outline of sections

4.3.1 Sources of photos

This section gives an overview of how photos are currently being sourced, giving examples from teachers who provide photos, examples when students provide photos, and when photos are sourced from outside sources. The different sources of photos are potentially palpably distinct.

4.3.1.1 Teacher-driven

Teachers were often providers of photos used within classes, defined as being *teacher-driven.* All teachers (excluding James) used their own photos as teaching and learning tools. For two teachers (Theo, and William) these were their primary source of photos, while Roxanne, Andrew, and Harry used a variety of sources. Harry remarked how technology had changed the teachers' ability to find relevant photos, commenting on the great tool people carried with them which could be exploited for teaching and learning.

> *The idea there is that anyone's smart device, like their phone, has a camera and so it's a tool that you carry around that you can use for yourself, or you can use for your students. So we try to exploit that. (HARRY)*

A teacher can use photos in a technical subject to bring in an example from the real world for recognition or problem posing as was observed in the previous chapter. When teachers are using their own photos they can use their existing knowledge to choose appropriate photos, whereas student-sourced photos can be used to indicate whether students are able to apply the concepts and choose suitable photos.

4.3.1.2 Student-driven

The second source of photos comes from the students, referred to as s*tudent-driven.* All teachers had encouraged students to provide photos for teaching and learning purposes to varying degrees. Andrew described one occurrence when students were encouraged to use their photos as a measure of recording and recalling evidence at a later date.

> *This was for an assignment. So as part of it they had to take photos of their area. So I ask them to take photos and show me what they have taken. I don't really mind what they look like it's more for later when they come to write their report that they are going to need these photos to help them write their report. (ANDREW)*

Although all teachers recalled times they had used students' photos, this was only observed in Andrew's, James's, and Harry's classes.

4.3.1.3 Other sources:

The final source of photos is classified as '*other sources',* whereby teachers or students use photos from a variety of resources, not physically taken by them. All teachers discussed other sources of photos used including magazines, textbooks, National Centre of Images, and online sources. These were often utilised in an unplanned manner, as technology allowed for quick finding and sharing of photos. James explained how he quickly finds a photo online and projects it up for students to see.

> *Usually if there's some quite concrete kind of concept that I want to get across to students and they don't know the word for it so it might be the name of an animal or something - I bang up a picture. (JAMES)*

James's use of the internet as a quick source of photos was observed during observation.

4.4 Huakina: Opening the door to learning

The benefits of photos identified by teachers have been grouped into themes and recorded and broken into five categories, under the umbrella term of 'Huakina (te tatau)' – to open the door. This term was chosen for its poignancy in reflecting the function of photos in opening of the door to the emergent themes of: motivating students, Ako-Shared learning, building confidence, building knowledge, and assessments.

4.4.1 Huakina: Motivating students

In order for students to learn, there must be both teacher and student engagement. Central to Race's 'Ripples of Learning' is students' need or want to learn; the motivation that drives them (2014). Motivation leads to good learning, which in turn fosters more good learning. Biggs and Tang (2007) concur, commenting that "motivation follows good learning as night follows day" (p.37). Within this section,

ways in which photos were found to motivate students is explored under two broad subsections.

4.4.1.1 Photos as a visual stimulant

Teachers indicated that photos provided increased motivation for students, engaging them in learning. All teachers commented that photos had the ability to impact on students emotionally, encouraging and motivating them.

Providing for visual learners

Some teachers perceived their students as visual learners, highlighting that photos allowed teachers to provide for this form of learning. Teacher educator William reported the use of photos was an effective, efficient, and innovative way of motivating students.

> *They [teachers] know that their learners are visual and because they know that their learners are visual they will always add on the visuals. Especially in the trades. Those learners are definitely visual but the educators are visual too and because they are visual they know that this is part of the identity. It's not foreign to them. (WILLIAM)*

Andrew used photos to arouse students' interest encouraging them to think about aspects of their field of study, linking discussion to prior experiences and future workplace. Students were initially observed during their first week of study on the programme, being shown photos from their future field of work, to foster class discussion and to create common understanding, an example of which can be seen in Figure 4.2.

Figure 4.2: Photo used to provide visual stimulant

While observing Andrew's class one student corroborated that students liked mathematical problems that included photos, as they were more visual and colourful.

It's a pretty cool assessment. It's interesting. (Student)

Providing visuals to support literacy

Some teachers offered suggestions that students were more visual as opposed to academic, and photos provided visual variety, reducing reliance on written words, therefore beneficial for low-literacy learners. Although he did not often use photos, James believed photos could offer support for more visual learners, as they drew on visual strengths while developing literacy in English.

> *A lot of our students are more visual learners. A lot of them are not the real academic ones. In many cases they haven't really succeeded in their system and I know some of them are quite artistic and so perhaps I could draw on this to play to the strengths more. (JAMES)*

In addition, photos were seen as key to reducing long stretches of demotivating text. Teachers highlighted ways photos enabled the amount of text to be minimised,

helping student engagement. Harry summarised benefits within online environments, commenting that the inclusion of photos eliminated long scrolls of reading, appealing to visual learners.

> *You can add value to a resource with images…and less really is more with your students. Especially online, because if you give them a whole page of readings, guarantee they'll read one or two and miss all this stuff that you might have thought was really important for them to cover. They just won't go there. Too much to read or 'T.L.D.R.' – 'Too long; didn't read'. (HARRY)*

Harry further explained how he set up tasks that minimised reading required, supporting those with low literacy, helping to maintain motivation.

> *You have a photo, you write some questions eliciting some thought about that photo and then you provide an opportunity for them to respond on it so that you can gauge what their understanding was which is much better than saying here's a reading. Read it and tell me about it in the forum. (HARRY)*

Andrew explained how photos supported students' learning as not all students were able to understand just text or a diagram.

> *Using photos of the real life to link it with the theory or diagrams because just by itself (the theory or diagrams) students are not going to get that. Some will get that without this, but some need this. (ANDREW)*

The inclusion of meaningful photos aided students' understanding and was a valuable teaching tool.

4.4.1.2 Photos bringing real world into the classroom

In order for learning to be meaningful to learners, it must be relevant to their world, highlighting the very significance of photos. Learning needs to be pertinent and applicable to the students' own world (Zepke, 2011; Stewart, 2013). Pere (1982) contends learning is a central part of a person's life experience, and when learning is significant, gained through first-hand experience, it will not be forgotten. It is through the use of authentic materials, such as photos, that teachers provide these opportunities and learners are better able to construct knowledge.

Real world application

Teachers emphasised that photos provided them opportunities to link students' learning to the real world, providing more relevance for students, and offering an opportunity to link learning to future workplaces, all while maintaining student engagement. Two sessions of Andrew's class were observed, with 60-80 students in each class. During the first class students were viewed calculating equations based on teacher-sourced photos. The use of photos in the classroom encouraged group interaction, and gave students a real world application, putting calculations into the perspective of having a practical value. The task encouraged collaborative group work and stimulated emotional engagement and enjoyment (Figure 4.3).

Figure 4.3: Emotional engagement

It was evident Andrew placed emphasis on giving students the chance to link theory to the real-world of their future workplace.

> *I think they saw the relevance of what they were doing (working with photos) and that's really how you build engagement. (ANDREW)*

Andrew further offered the well-known saying '[a] picture says a thousand words' and noted photos had the ability to keep students focused and on track through the association with real life.

So that they've got something solid to work with -- using the photos of the real life to link it with the theory or diagrams. They help the students bridge the gap between theory and practice. (ANDREW)

Throughout each of Andrew's classes, students' motivation and engagement did not appear to wane, with students seemingly engaged for the duration of the activity, interacting collaboratively within their groups and with the photos (Figure 4.4).

Figure 4.4: Student engagement

Students recognised the importance of real world application. One student commented that he felt his teacher used photos because they were something students could relate to, being pertinent to their future work.

Real life photos appeal to me more than just a triangle. I can relate to it more than just a triangle drawn on paper. I guess it is more like what I will be doing when I am working. (Student)

A further student concurred commenting;

You can connect the dots a lot more. I've worked on an engineering site and it's much easier when you are given a photo than a diagram as you can see everything in the immediate area and you can relate to it. (Student)

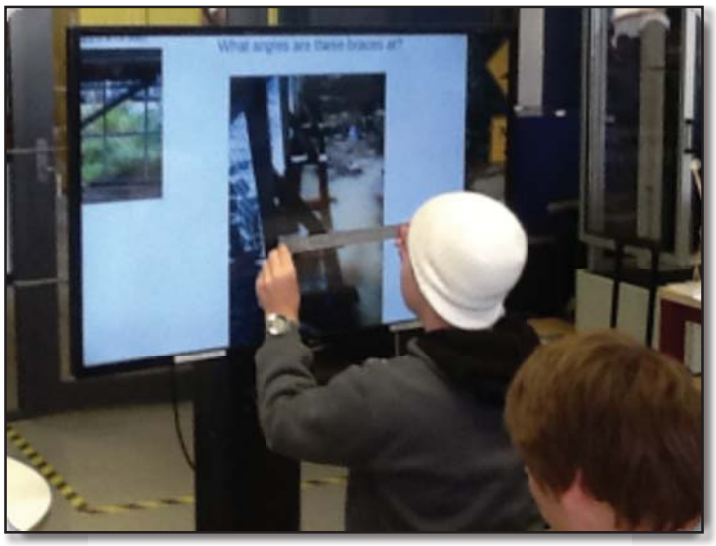

Figure 4.5: Solving real-life problems

Andrew remarked that photos added relevance and variety, meaning students were more readily able to make connections to theory, providing him impetus to continue utilising photos within his classroom.

Roxanne used photos to provide her students with meaningful links between their experiences on a field trip to a local Marae and their practice.

> *I have used them (photos) to prompt 'Who had an opportunity to sit with *** and share a story? What was it about his interaction that sat with you that you brought away from that experience?' - and then linking those feelings and experiences to how it feels for them to sit with families when they come into a centre - so having some sort of meaningful link to their practice. (ROXANNE).*

Memorability

Photos provide students with a visual trigger to remember and recall more easily than just words. Roxanne commented on the power images carry, as images were able to engage learners emotionally and enabled the story to be remembered.

> *…but I do think that sometimes the story is told just with the image - I think that the power of images is that it can tell its own story - those were the images that would tell the stories and would last. (ROXANNE)*

Likewise, James highlighted ways photos increased memorability by evoking emotions, resulting in increased participation and motivation.

> *So as I said before – I think they [photos] could evoke a range of emotions you know, which we could use to engage students and just open up other areas of talk. So it could be an emotional reaction to these things that I could sort of draw on – and I don't. (JAMES)*

Supporting the narrative

Photos took on a valuable role in supporting narratives. Teachers highlighted the emotional engagement involved with photos, perceiving there to be benefits in relation to sharing of narratives to engage and motivate students. Roxanne discussed how she used photos to recall and tell a story, in much the same manner as stories relating to carvings on the Marae have been shared for generations. Photos were used to build the background to the narrative and support explanations.

> *[Photos are] like with the whakairo…the carvings we have at the marae. For us they tell the stories…I was explaining about Tāwhaki, which is one of the carvings, and I tell the story of Tāwhaki and how he retrieves the three baskets of knowledge and what that looks like for us in context, and everyone is 'Wow! All that from one carving'? So I understand the importance of that visual representation that can actually capture the story…I think my upbringing – we were just seeped in indigenous pedagogy, so we were constantly listening and watching…always looking for the story involved in the image that was presented. (ROXANNE)*

Additionally, Harry valued the support photos provided a narrative. His online tasks offered students opportunities to share stories, either written or visual, commenting that students often discovered more benefits in using photo-stories, as photos provided a multi-layering of story.

> *Everyone starts off by just writing and then they kind of catch on to the fact that you can say a lot more with a photo and then annotate it. (HARRY)*

Likewise, William explained how photos he took, for teacher development purposes, could support narratives through the stories they told.

Most of them are within a narrative methodology because they go back to significant events from experience, and usually it's a story with a beginning, a middle and an end. So the photos, to me, have that function. (WILLIAM)

Promoting discussion and debate

Benefits of photos to prompt discussion and debate between students, in order to further motivate, while encouraging understanding and learning were highlighted. The complexity of discussion varied between teachers, from basic encouragement of quick conversation, to using photos to promote in-depth debate, and critical thinking surrounding potentially sensitive and controversial topics.

The sharing nature of photos and their ability to get people thinking about potentially difficult topics such as diversity, were discussed. Roxanne expanded on one example where she used emotions evoked by a photo of a lady with a ta moko in a risqué pose to encourage dialogue and critical thinking.

*They stimulate thought especially around diversity - to help people start thinking. I have a photo - it's quite a powerful image…I think it's stunning and one of the reactions that one of the students had who was Māori said - "Aren't you concerned ***? Aren't you concerned that she could get into trouble?" And there's the comments that are born out of ignorance around "She's too fair to be Māori." - "What do you mean she's too fair? I'm fair and I'm Māori!" …it's to have those discussions around just because she's wearing a tā moko does it necessarily mean she's Māori, or not? And then there's a whole big debate around it. So that's what I'm doing. I'm playing devil's advocate. Rarking them up! But that's important. (ROXANNE)*

Roxanne cautioned that she only did this with her second year class, as they knew each other well and had built rapport with each other. Just as photos can be used to motivate students, if care was not taken, they could be demotivating to the students.

The promotion of discussion was additionally observed during Andrew's class where debate and animated interaction was witnessed during a photo exercise where

students were asked to use their photos in an assessment task (Figure 4.6). Andrew's use is further explored in the Vignette below.

Figure 4.6: Students interaction as a result of photo stimuli

Vignette 1 - Andrew: A positive experience

Andrew is an Engineering tutor who teaches in various modes (face-to-face, synchronous and asynchronous on-line classes). While interviewing Andrew about his use of photographs, and observing his classrooms, it was difficult not to be enthused by his experiences.

During the second observation Andrew's class of 60-80 students was assigned a task to complete. Andrew had changed the assessment from previous project-based evaluations to an in-class group-task, so was able to compare between the two assessments. Students were asked to take photos of objects around the campus linking them to Learning Outcomes of the Module (e.g. 'Demonstrate an understanding and apply fundamentals of statics, dynamics and mechanical energy concepts'). They had to create questions and answers relating to photos that demonstrated the Learning Outcome and present them on an online Mahara ePortfolio template. Each group's project became a resource for all students.

> *I wanted to immerse them into the learning outcomes…but also share it with everyone else too. The students were engaged and I thought*

they were right into it. I think they saw the relevance of what they were doing which is really how you build that engagement.

The task was scaffolded prior to assessment, with students exposed to Andrew's modelling of photos within classroom tasks, and with students trialling a similar task during the prior lesson.

From my observations I think they were pretty well prepared for it.

During follow-up discussion, Andrew commented on how pleased he was with the assessment and engagement of students throughout. Andrew planned for students to repeat this activity four times, each occurrence worth five marks, with students working in different groups each time. He commented he was still very much in the beginning stages and was already looking at changes for the future, which appears to be indicative of his reflective practice.

Andrew remarked he was lucky to have experience of using photos to help him create these activities. He explained that once he had come up with the idea he just had to fit it in with ILOs. He then completed the task himself to make sure everything worked, taking him approximately three–four hours planning time. Engagement and enthusiasm surrounding this assessment was evident with students making the following comments:

A *pretty cool assessment.*

It makes it way more interesting than just a drawing. It makes more sense as it's real.

We can learn from each other as we don't have time to research it all ourselves.

A positive experience for all.

4.4.2. Huakina: Ako-Shared learning

Ako can be broadly described as the practice of teaching and learning within a caring and inclusive environment. It is focused on building relationships between teacher and student, where both are learning from each other in a reciprocal manner. A key aspect of Ako is the mutual nature of learning, and valuing through respecting of identity and culture which every individual brings with them. Race (2014) contends students' learning is deepened when they become the teachers. The sharing of teacher-learner, learner-learner interests and knowledge is paramount, denoting a key role for photos. The following section considers ways photos can be used to enhance and build relationships conducive for reciprocal learning.

4.4.2.1 Getting to know each other

Teachers emphasised ways photos encouraged a sense of ownership of learning, and fostered building of Ako relationships, beneficial in two areas in particular: online environments, and when language barriers were present.

Personal photos of students and teacher played important roles in setting up rapport between teacher and students in Harry's online environment, by aiding recognition and recall. Harry asked students to provide photos of themselves which helped both teacher and students' recognition and recall.

> *It's a face, which is fantastic especially with online learning …because it's so hard to connect a personality with someone you can't see…It helps my memory of them as well – even little things like when you've got three Lisa's in a module. It helps to differentiate them. (HARRY)*

Within language classes James offered an example how students were encouraged to share photos of their home towns, helping the process of his getting to know students, and students getting to know each other.

> *So I remember last semester I had a thing where they were putting up photos of their home town and describing them. I remember one student. She was from *** I think, in China. It was the most beautiful photo. (JAMES)*

This simple action of sharing photos offered a tangible connection to the students' background.

4.4.2.2 Sharing of knowledge

Sharing of knowledge and learning within a collaborative community of learning is pivotal to Ako and social constructivist theories of learning. This was unmistakably important to Andrew as he planned photo tasks fostering collaborative work.

> *They are doing it [posting photos onto Moodle] in the best way so that they collaboratively help each other out…And another good thing is that we are working as an entire class as we are researching other things, we all upload onto Mahara and we can learn from each other as we don't have time to research it all ourselves. (ANDREW)*

James highlighted the ability of photos to encourage social learning and interaction, particularly with students for whom English was not their first language, although it was not something he currently did.

> *There's lots of things I could do with that [indicated to a photo] you know because I'm really into social interaction- so just conversation stuff…so I could be using photos for this sort of thing – but I don't. (JAMES)*

Roxanne explained her use of photos of a visit to the Marae which had captured interaction between generations to encourage discussion, build relationships and foster sharing of knowledge between generations, linking this to Māori pedagogy.

> *So there was that whole – we have a strategy called Tohungatanga where the youngest sibling learns from the eldest and the eldest learns from the youngest – and that was Tohungatanga in action. (ROXANNE)*

Roxanne further gave an example of benefits of encouraging student discussion during, and after, a visit to a Marae. Students would post their own photos on a purposely-formed Facebook group, where students were able to share and talk about photos and offer support to each other.

> *I think one of the more powerful ones were a photo of the Wharenui, or the meeting house, while we were standing outside and one of the students had put up this post and it says 'Okay. Now I'm scared'. And it was the affirmations that came from others later on identifying, actually that wasn't as bad as we thought it was going to be. (ROXANNE)*

Photos recorded collective moments, which could later act as triggers to help students recall moments from the comfort of having survived the experience, recalling their feelings and discussing it in a narrative, building upon their joint experiences.

4.4.3 Huakina: Building confidence

Teachers discussed ways photos fostered confidence and created ownership for students, giving students a sense of belonging, and building self-esteem. Self-esteem and self-confidence is the belief a person has in their ability and is often

regarded as one of the most important ingredients for successful performance (Brown, 2007). It is through an accrual of experiences that people are able to build their self-esteem. It is crucial these experiences be acknowledged and valued in order for the learner's self-esteem to be maintained (Knowles, Holton, & Swanson, 2005). Within online and classroom contexts, photos were noted being used by teachers to instil confidence in students. The following sections will look at a selection of examples.

4.4.3.1 Establishing belonging

Harry commented on benefits of photos in building students' confidence at the beginning of his online classes when used as an icebreaker, as they appeared to break down barriers between students and teacher and gave students a sense of belonging.

> *So confidence…it's a confidence builder. Everyone can talk about themselves. (HARRY)*

The use of photos was seen as less threatening than exposing their vulnerability through writing. Harry felt when students were able to succeed in tasks it gave them confidence to complete further tasks.

Roxanne explained how she used photos of a shared experience to encourage students' sense of belonging by printing them off and displaying them on the classroom walls. She contended that they were accepted within the learning group, it helped to build confidence.

> *The feedback from that was really, really, good, because they like coming in and "Oh I'm on the wall ***!", "Oh that's a cool photo! I like that photo…you can keep that one." It helps with ownership and they claim this space; take ownership of this space. (ROXANNE)*

Photos provided an opportunity to foster this sense of belonging.

4.4.3.3 *Individualising students' learning*

Andrew, encouraged ownership of learning by building students' confidence, using students' own photos, to recognise their work, and encourage conceptual understanding. He encouraged them to take photos and to create questions linking photos to learning outcomes, and then answer the questions. He later used a selection of their photos within his assessments.

> *So the reason I do it is to validate them doing the work online…to help encourage them to keep doing it next time. (ANDREW)*

Andrew felt this validation would help build self-confidence.

James discussed how students build confidence by setting their own realistic goals with photos, describing a successful occurrence where he encouraged students' ownership of their learning. Students presented photos depicting where they would like to be in the future, helping them set realistic learning goals.

> *I do this thing, usually at the beginning, where they have the future English self, kind of. The idea was that the students should imagine how they could be using English next year, and then 5 years, and maybe 10 years down the line so that they've got a vision of where they want to get to. So that they can stay motivated and work towards that. (JAMES)*

Photos provided students with the chance to set their own individual learning goals, which could otherwise be difficult to express with limited English.

4.4.3.5 *Students' use to gain self-confidence*

Students appeared to have an innate understanding of how photos could support them to build their confidence. Although James did not use photos often (see Vignette 2) his students demonstrated their preference for using photos. While observing James's class, students gave presentations, where they all chose to use photos or visuals, to support their presentation (Figure 4.7).

Figure 4.7: Using visuals to build confidence

One student began by saying "[t]oday I would like to begin with a picture" and then went on to ask other students what they thought of the picture, stimulating discussion. When questioned about their use of photos, students commented they used photos to help them remember, and to make their story clear, which helped to calm anxiety.

Vignette 2 - James: Could, but he doesn't.

James, an English language teacher who freely admits he does not use photos to their full potential, appeared to be bemused as to why this was, often saying "I could - but I don't".

James is an experienced teacher, having been teaching English since 1997. James wonders if one reason why he does not use photos is because he considers himself to be 'an aural kind of person' rather than visual.

> *So I could be using photos for this sort of thing but I don't. I'm not a hugely visual person myself so I think that possibly it's just I've got those habits, what kind of works for me and kind of ignoring the students.*

James acknowledges his students are more visual learners and many of them are very artistic. He felt this was something he could draw on to help them learn. While observing his class, as mentioned above, I found it interesting that all students used a photo or visual to support their presentation, demonstrating

how visual his students are, raising questions surrounding why James does not utilise photos further.

James offered suggestions on how photos could be utilised more for social interaction, although again acknowledged he did not do this. Although James mostly works from standardised workbooks which are littered with photos, he explained he does not even register many photos while he is teaching, nor does he direct students attention to them.

> *I don't even recognise some of these pictures. I think when I pick up the book I don't even really look at them. I don't really draw the students' attention to them either.*

While looking through the book James suddenly showed me one photo he remembered talking with his students about, and commented he only did so because the teacher's book said to.

Photos do not register in James's teaching toolbox. James remembered a maths test he did when younger. He explained how he completed all questions, handed it to the teacher who then commented he had not actually answered all the questions. James was puzzled until he realised it was a question relating to a photo he had missed.

> *That is how un-visual I am. My eyes were just not drawn to it or maybe I glanced at it but to me it was a bit of decoration. I missed the whole thing. It's stayed with me for some reason. So to me it's just a distraction.*

James's experience highlights that teachers often teach the way they learn best.

4.4.4 Huakina: Building knowledge

It is preferable to encourage a deep approach to learning, rather than a surface approach, to help students build knowledge and understanding (Biggs & Tang, 2007). They maintain a surface approach to learning happens when teachers do not align tasks to learning outcomes of the subject, highlighting a deeper approach to learning, encourages students' need-to-know, curiosity and taps into their prior knowledge. The following section provides examples of ways knowledge was built through photos.

4.4.4.1 Setting the scene

Teachers indicated photos were often used at the beginning of classes to help set the scene, and to quickly and accurately introduce ideas and concepts.

It's usually more about setting the scene. Setting expectations…so that they've got something solid that they can work with. (ANDREW)

Roxanne explained how she used photos to set the scene in order to support teaching of a pepeha, by giving students a visual template.

The other images I've used were for first year students, around exploring pepeha. So images of mountains and rivers to give them a contrast to just help consolidate their learning around the process of how maunga comes first, then there's awa, then there's waka. So there's a template for a pepeha. (ROXANNE)

4.4.4.2 Bridging gaps

Teachers emphasised the use of photos to help bridge linguistic, knowledge, and cultural divides. Although James indicated he did not often plan to use photos, he discussed benefits of bridging linguistic gaps where English language learners were concerned. This was demonstrated when James explained to students the concept 'looks dangerous'. He quickly sourced a photo of a growling dog, from the Internet, to help students' gain meaning (Figure 4.8). Immediately students were observed nodding and talking amongst themselves, offering affirmation of understanding. The picture gave timely confirmation of the concept.

Figure 4.8: Using photos to explain concepts

James felt photos were important for English language students, when they did not always have all words needed to discuss difficult topics.

> *…you've got the walls around you but photos bring in the outside world don't they…or capture things that are difficult to talk about. (JAMES)*

A student from a non-English speaking background within Theo's class mentioned the real value of using photos to help bridge academic language gaps.

> *Actually the theory is no problem as I have a degree from Korea. It's just that I do not understand some words. They are very uncommon. The photos help very much. (S2)*

Andrew explained how photos not only set the scene within an engineering learning environment, but bridged knowledge gaps by giving students something solid to work with, rather than something hypothetical.

> *So all the photos are just more to relate to what we are talking about rather than anything else. They just help the students bridge the gap between theory and practice, which is probably one of the main reasons that I do it…linking to what we are doing and to create a bit of interest… A way of providing some relevance to what they were doing. (ANDREW)*

Photos encouraged meaningful learning for students, and created a link to the workplace, connecting theory to practice.

Additionally, Harry discussed ways photos could span gaps between diverse ranges of learners, allowing different ways to put forth ideas. Harry suggested being able to use photos, rather than just words, provided students the ability to make choices that best suited individual's education, and accommodated for a range of learners.

> *I think that there should be flexibility in how a student proves or justifies an answer. Telling them that there's one way isn't necessarily the right way to teach, or expect a diverse range of answers because that's the real world. We don't all think the same. (HARRY)*

4.4.4.3 Stimulating critical thinking

Underpinned by Māori pedagogy, Roxanne clarified how much of her teaching centred on culture and diversity, and how encouraging debate and discussion

surrounding controversial photos could stimulate deliberation concerning subjects that would otherwise not be examined. Roxanne explained how she presented photos that challenged students' existing knowledge, and assumptions or 'single stories' they might have.

> *I like using photos that stimulate thought…especially around diversity. There are some significant cultural differences for Māori and Pasifika and non-Māori. It's to eliminate the single stories that people have about different cultures. The assumptions we make up through what knowledge we currently have and what we have yet to learn. (ROXANNE)*

Theo explained how he used photos to encourage critical thinking within students.

> *So getting them to break down the task. What are you doing? Why are you doing it? And the idea was that by taking photos and putting them into a sequence they are actually doing that. They are having to think about what they have just done. (THEO)*

In doing this, Theo aimed to support building of knowledge. However, he encountered some issues with student engagement as seen in Vignette 3.

Vignette 3 -Theo: A roller-coaster ride

I would like to take a closer look at the experiences of another teacher, Theo. Theo has had a roller-coaster ride when it comes to using photos as a teaching and learning tool. Theo comes from a trade background, having been a graphic designer before becoming a carpenter, and then moving into tertiary teaching. He is self-labelled as a 'very visual person' who was recently charged with upgrading online content of a Level 4 Certificate qualification.

As part of this upgrade Theo spent many hours adding photos and visual activities to online resources. Theo enjoys enquiry-based and project-based learning so his idea was to make online activities more interactive and real. Theo spent many hours sourcing photos, going out and taking photos to ensure he had the best possible photos for activities. He was enthusiastic about this project even though it was hard work.

> *At the time when I did it, it was a hell of a year for me. They took me away from my fulltime teaching role and got me fulltime developing - but*

I really enjoyed it.

The end result of Theo's year-long development was a visually inviting, interactive learning site for students to use and engage with, to support learning. The students, however did not fully engage. When Theo endeavoured to get students to take photos to demonstrate understanding of the topic, he found student engagement to be minimal.

You read how wonderful these things are but when you try to implement them, you know-the buy in-it was tough. To get teenage boys to do it - I really struggled with them taking photos.

The reasons Theo highlighted were lack of time, an overcrowded curriculum, and a lack of student knowledge. Theo's four-day timetable was cut down to three days, and in doing so compounded time pressures of teaching 33 unit standards within the academic year. Theo felt students quickly became aware of activities that did not have grades attached, even if they were intended to reinforce learning. There was consequently no engagement in these activities.

Even if you tell them, it looks all 'official', it looks part of the curriculum, students know. They have a second sense on exactly what they need to do and what they don't need to do.

Theo is disheartened as he realised unless these were a weighted part of curriculums, student buy-in was not going to happen.

Additionally, he wonders if students have the knowledge to be able to use photos or take purposeful photos. He commented that visual literacy is so very important in education but often ignored, which made him wonder if he was overestimating the level required to complete activities.

Theo's rollercoaster ride continues as, although he is adamant the project should continue, it is apparent he himself is disheartened. While thinking back about this project he concludes:

It took me ages. I went and took all these photos. I have some fantastic images but…but…it's too much…it's not being used.

4.4.5 Huakina: Capturing key moments

Photos were often used to record key evidence and stages of students' learning which were fundamental for later reflection. Zepke (2011) explains that the second stage of the reflection cycle involves casting your mind back to recall the experience (stage one). In addition, Zepke and Leach (2011) suggest reflection activities can assist students to analyse and evaluate new ideas. It is here photos play a crucial

part in capturing key moments to facilitate recall of memories. The following section looks at ways both teachers and students used photos to capture key moments.

4.4.5.1 Teachers' key moments

Roxanne clarified how she captured powerful, strategic moments during field trips, which were later reflected upon and stimulated class discussion, where students and teachers were able to revisit these crucial moments. She gave an example of one which she felt was very poignant.

> *There was one where they were planting. There was an interaction with one of our students and our Kuia, our host Kuia. They were planting together and they actually had this bulb in their hands and they were planting together. It was powerful. (ROXANNE)*

Likewise, William, a teacher educator, explained his use of photos to capture fundamental moments in observations of other teachers' lessons, in order to revisit them later. William's key moment photos were supported with annotations and became central to later feedback sessions.

> *I then get out and I take a photo – a telling photo. And that photo – its purpose is almost as a mnemonic device. A memory device. I immediately annotate the photo so that there is also a verbal clue as to what happened and what was said...making sure that the annotation is descriptive enough and that it tells you what the context was…so the photos then become the memory device to talk about almost anything. (WILLIAM)*

Theo explained how he used photos to document key stages of a process as a model for students and how he had students document their same stages and reflect on them.

> *So the practical projects, they have a digital story (photo evidence) of what they have to do as an example…and so I took photos of them and they put their photos with subtitles into the reflection template. (THEO)*

4.4.5.2 Students' key moments

The use of photos was not only used for recording key moments for reflection, but it was witnessed being utilised as a record of learning points. Although James did not use photos, this did not stop students in the class utilising photos to help their learning. Many students were observed using the camera device on their smartphones to take photos of key learning points during their classes (Figure 4.9).

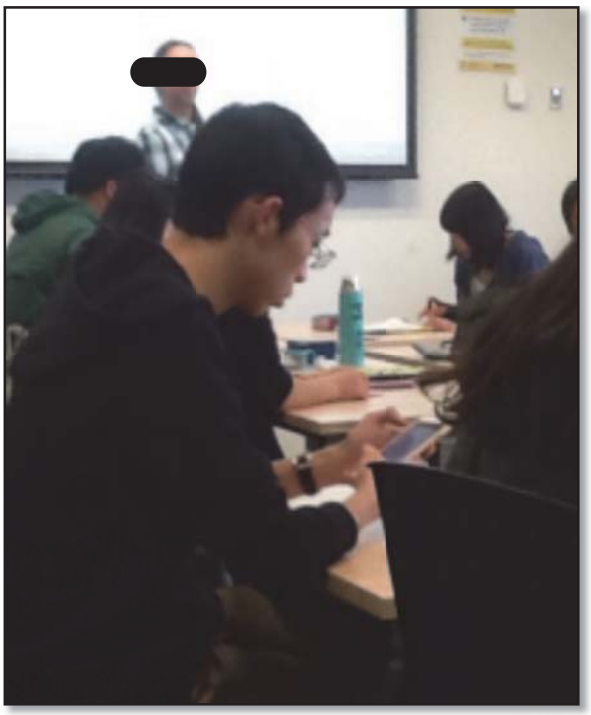

Figure 4.9: Students recording key information

Taking photos of class work provided students with quick and accurate recordings of key learning moments for later access.

4.4.6 Huakina: Assessment

Assessment is an integral part of teaching and learning. Race (2014) argues students' learning can be deepened when they are involved within assessment processes, assessing not only their work but other's. Leach, Zepke, and Neutze (2011) highlight assessment as one of the most important aspects of teaching which

is crucial to get right. They contend assessment should focus on both the process of students' learning and outcomes.

The teachers further deliberated benefits of photos for assessment purposes, by providing concrete, summative evidence of students' learning, and providing evidence for formative assessment prompting reflection and recall.

4.4.6.1 Photos as evidence of learning

Photos were seen as a clear and efficient way of recording evidence of learning for formative and summative assessment purposes. Roxanne and Andrew used photos as evidence of learning, which Andrew contended were especially useful in large classes; William and Harry used photos to document different phases of achievement; Andrew additionally used photos to document what students new; while Theo adds a cautionary note.

Roxanne elaborated how taking photos on field trips, or during students' teaching practicum, was the most practical way of ensuring evidence of learning and participation was documented. She explained that photos were used during a Noho Marae experience as evidence.

> *It's evidence. It's part of their assessment criteria to make sure that they have got the evidence that says they are doing what they are meant to be doing and meeting that criteria. (ROXANNE)*

Andrew, asserted photos were useful documentations of evidence, especially in a large class situation where teachers might not always observe evidence.

> *So that I can check to see what they've done. (ANDREW)*

William concurred, explaining how photos provided him with the means of capturing formative stages of assessment. He highlighted how difficult it could be to capture evidence in some disciplines.

> *This then becomes the evidence which they lodge… All of those configurations were there. So then it becomes a very good source of*

evidence. Evidence build-up. It captured the formative and often we don't capture the formative. It's not that easy to capture especially if one is working in the world of words. (WILLIAM)

William explained how he took photos during teaching observations for teacher development purposes. Photos became a source of evidence used for formative assessment purposes in follow-up conversations to help teachers recall what had occurred during their teaching practicum, and for self-assessment (Figure 4.10).

So the photos then become the memory device to talk about almost anything. Often they are reminded of things that I didn't see - It's about an awareness raising exercise. In other words, the idea is to link it to awareness raising and reflection -it's a memory device with a purpose and the purpose is reflection. It's to take them back to events in the past and to remind them as cues, so that the reflection can be easier and they can be reminded of what happened and they can begin to reconfigure their thinking. It takes us back to the memory device but it also takes us into reflection. (WILLIAM)

Figure 4.10: Photos taken for evidence and reflection

Additionally, Harry discussed the ability of photos to provide clear and concise evidence, explaining they could be used as proof of completion of tasks.

A photograph is actually normally more powerful…because you know we can see it…it's proof. (HARRY)

Andrew provided an additional example of using photos for later recall when students were encouraged to take photos on a building site to record key information, to help recall information later on and demonstrate knowledge of the topic in an assessment.

> *It's for later on when they come to write their report they are going to need these photos to help them write their report. So that's probably the closest to reflection that I get and they're going to come here and go great I've got that. (ANDREW)*

However, a cautionary note was stressed by Theo who conveyed issues associated with acceptance of photos as evidence of learning instead of more traditional written assessments.

> *Because I have to be moderated and show people how I've proven that they are competent and the moderators are quite old-school and they freak out if you say oh look I've taken a photo or a video…they like to see written tests and written answers. (THEO)*

4.5 Limitations

All teachers reported limitations when using photos with five interrelated themes emerging. This section explores these five subsections, which impact on each other, making defined reasons difficult to ascertain (Figure 4.11).

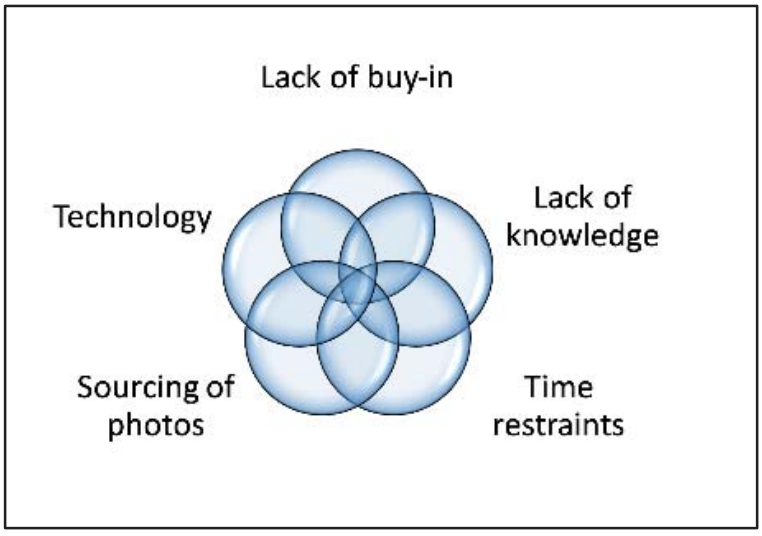

Figure 4.11: Limitations of using photos

4.5.1 Lack of buy-in

Teachers explained that a lack of buy-in could impact on the use, and success of photos. Race and Pickford (2007) highlight the need for students to know why learning is important, and the necessity for teachers to remind students of the relevance of learning in order for them to become engaged. The following section is split into two further subsections relating to lack of buy-in, with examples from both students, and teachers.

4.5.1.1 Students

Teachers discussed the need for students to be able to see value in activities. Theo commented that students were not willing to participate in activities when required to take photos, or use photos. He acknowledged students were at times disengaged.

> *…but no – no - [Reaction to students not taking photos as evidence] and that really, really surprised me -.you don't have to do a written assessment - but nah! [Indicating students did not complete this task] - and I give them the task and boom - nah! - but nah - and it's because everything is so instant - take a photo of a hazard relating to portable power tools - but - no! (THEO)*

Andrew discussed the impact of lack of student engagement, explaining how students were asked to bring their photos to class, resulting in minimal engagement when asked to complete in their own time. He acknowledged this was a widespread issue, not just a photo-related issue.

> *It's exactly the same with any student it's just whether or not they can be bothered…But we find that there's not enough students that do it to make it worthwhile. So we've got 60 students and only five of them bring photos to class. If we've got 20 then that would be good because then we could divvy them up and we could all look at them. But it's just getting those 20. (ANDREW)*

The implication has been that photos lead to reflection but Andrew is cautioning in that notion, highlighting that actually a photo does not necessarily have that gravitas per se; it is the use of it that would allow it to happen. Andrew put students' lack of buy-in down to generational personality, commenting that students are more interested in the 'now', and were of a 'use and forget' mentality.

You know the average student probably has about 1000 photos on their phone -so by taking a photo, it's instant take and forget. This is the society we live in and then the second thing is there's a whole lot online as well so "I could take it or - oh there'll be one online." - I think we're finding that students are definitely moving to the – "Oh the information is there -I'll just use it when I need it." 'Use and forget', which we hate, but it is the society. It is the generation. It is how it is. (ANDREW)

These examples highlighted differences in generational philosophies and approaches towards immediacy. Theo posited many reasons for students' lack of buy-in, such as a lack of adequate technology, the curriculum was too content heavy, and students were aware there were no marks attached to activities.

4.5.1.2 Teachers

Teachers need to value photos, and have time in their work schedules to allow for careful planning of good teaching to occur. Zepke and Leach (2011) contend it is of high importance to have institutional support for good teaching and learning for engagement to occur. Throughout Theo's interview his demeanour and emotional reaction indicated he had become disillusioned with using photos due to lack of student buy-in, and lack of institutional support. Theo discussed special classes he facilitated to introduce students to new online learning forums which included many photos and photo-taking activities, however when he sent students back to their mainstream classes' participation was not supported by mainstream teachers.

So when I let them go back to their tutors to take the photos that wasn't really encouraged - I didn't have total buy in (THEO)

James is indicative of the attitude of teachers who had not yet embraced the possibilities. He construed one reasons he did not use photos was he was not a very visual person himself and he had habits within his teaching that were difficult to break.

So to me yeah - it's [photos] just a distraction for some reason. I haven't thought about it before but as I think about it now – consciously – These - I could have sworn that I'd never seen these pictures before. There's lots of things I could do with them [photos] you know. You slip into patterns as well - ways of doing things. (JAMES)

These patterns of teaching James refers to can be linked to a lack of understanding about how teachers and students could use photos better, or a lack of time to plan for their use.

4.5.2 Lack of knowledge

Another theme to emerge was a lack of, both teacher and student, knowledge. Often teachers expected students to know how to learn their discipline through photos, not realising the need to teach students how to process photos to gain desired information. Teachers' use of photos did not always appear to be carefully planned, or scaffolded. This section looks at examples of a lack of knowledge demonstrated by both teachers and students and concludes with William's thoughts relating to the need for VL standards.

4.5.2.1 Teacher knowledge

Although teachers mentioned a lack of teacher knowledge, they appeared more focused on students' lack of knowledge. Harry recognised there were areas that needed action. While he felt students at times lacked ability to learn from photos, he speculated this could be partially due to teachers' inability to draw information out of students, or to scaffold learning.

> *…but do they know how to unpack that as learners? I would probably say no, in general. So it's partly to do with the teachers' ability to draw out understanding form students around the picture. (HARRY)*

James indicated he thought teachers did not have enough training on how to use photos to teach, nor an understanding of how useful photos could be as a teaching tool, however he acknowledged he could be basing this discussion on his own bias.

> *My gut feeling is no. I would say no but I don't know if I'm basing that on myself or, I guess I have observed a lot of teachers over the years. (JAMES)*

Conversely, both Andrew and Harry had sound knowledge of teaching principles, planning learning activities and assessments linked directly to ILOs. Andrew

commented he wanted students to 'completely immerse themselves' in ILOs, while Harry outlined that learning outcomes were at the forefront of his planning.

> *I look at the Learning Outcomes first so it's really aligning what the purpose of the activity is to match the learning outcome and the suitability of the image. (HARRY)*

Their examples highlighted the lack of alignment in other cases.

4.5.2.2 Student knowledge

Although younger students are often considered to be 'digital natives', concern was raised regarding the level of skill required for students to critically think and read photos, and how students did not appear to have this level of VL. Theo recognised challenges that effectual and critical use of photos required, questioning the level of student literacy necessary to optimise the use of photos.

> *You know these digital natives – they're not quite here yet…I'm trying to create a digital story but the literacy and the skill and the level to do that is huge. It's high. They've got to critically think about what they are going to film and it really made me think of the literacy of it... (THEO)*

Roxanne underlined the need for clear teacher scaffolding, emphasising students' inability to utilise photos taken when reflecting upon them, suggesting a lack of knowledge when using photos to critically reflect.

> *I don't think that they realise the story line that they have set themselves up for until they actually go back and start reflecting - but I don't think they really understand it unless I speak to it - or someone else speaks to it - yeah it would be really cool if they could though. (ROXANNE)*

Teachers raised concerns about students' lack of VL skills hindering their ability to effectively utilise photos, additionally raising questions about whose responsibility it was to help students acquire skills. William questioned whether, within this era of educational accountability, there were any agreed on VL standards at all, and if a level of VL consistency existed throughout tertiary sectors.

I can't find any (VL) standards. I think it is important but whether it is dealt with-? I almost want to say to you 'no' - because when you say visual literacy I understand it to mean how to reason about, and unpack, visual images in the context of learning…I don't think that that is done consistently. (WILLIAM)

William queried if photos, and the ability to use photos, should be seen as not simply a motivating classroom activity, but potentially a step towards an established graduate profile.

4.5.3 Time restraints

Time restraints impacting on planning of classes and resources, and the scaffolding of activities, due to heavy workloads was deliberated. This section discusses teachers' time restraints with regards to planning, and secondly explores students' time restraints.

4.5.3.1 Teachers' time restraints

While the instantaneous nature of photos is appealing and means people can source them quickly, Harry sounded a cautionary note highlighting teachers need to integrate photos with carefully thought through ILOs.

You have to try and find one [photo] that matches [ILO] otherwise don't use it because you are changing your learning outcome just for your resource. (HARRY)

Harry's knowledge of planning for good teaching and learning emphasised planning is an evolving, on-going process, which takes time. He suggests new practices, such as using photos, may end up being deferred due to time restraints.

I guess everything is under review - every time I teach I'm - we're relooking at the wording, relooking at the learning outcomes, saying what's the best fit activity for this and quite often photographs will come up - and you don't always have time to make all the best resources to cover all your bases the first time around - so you might do it the next time. (HARRY)

However, Harry's expectation that innovations would eventually emerge was not a view shared by all. James saw overwork as endemic amongst teaching staff, remarking that many teachers were overextended, resulting in lack of staff morale. As a result, he felt there was insufficient time for planning lessons, impacting on teachers.

> *…by the time you've taught, and you've done all your admin, your assessment, all your meetings (I once had nine hours of meeting within less than a week). It's just unbelievable. And people are not – lessons are just unplanned. (JAMES)*

Time pressures impeded Theo, who explained that he tried to scaffold learning but felt this was just another task in an already overloaded timetable.

> *We try to scaffold - we do - we do scaffold but the scaffolding is pretty steep, and it's action packed, so you haven't got that time to - you know when we talk about those literacy skills….with the amount of the material in the course - there's no time to breath - or scaffold. (THEO)*

Theo commented that having time to use photos was pivotal to their success as teaching tools, highlighting the need for time in content-heavy curriculums to scaffold, in order for them to be used well.

4.5.3.2 Students' time restraints

Theo voiced concerns about students' lack of time. He perceived the time available due to full curriculums, limited student desire to use photos, or participate in activities that did not directly relate to grades.

> *Because everything is crammed and everything is busy - and they know - they're onto it - they know it's an add-on. (THEO)*

Theo acknowledged if students spent more time on photos it would come at the cost of something else.

> *It just needs more time - just needs more time and something taken away - (THEO)*

4.5.4 Sourcing photos

Sourcing of photos was deemed to be problematic by teachers, as finding clear and pertinent photos was not always easy, took time and required knowledge. This section explores difficulties connected to sourcing good photos.

4.5.4.1 Sourcing good photos

Finding photos to fit content, and utilising technology, is not always straight forward. Andrew commented on difficulties of sourcing 'good' photos capable of clearly teaching points he was focusing on. Both Andrew and Theo cautioned about ensuring photos portrayed exactly what was intended, explaining some photos could be ambiguous and care was required when choosing photos.

> *Being careful that the photo does do the purpose that you want it do - because it's very easy - you could take a photo that's too complicated or show things that you didn't want it to show….and that's why you have to be careful you don't confuse them with a photo trying to explain the wrong thing. There's more care than just going bang…and it's the same with a student too… So that's why you have to be a bit careful with instructions for keeping it simple. (ANDREW)*

Andrew's concern was highlighted by one student, who discussed the quality of a photos used in class, when projected on the screen, made tasks very challenging to be precise with measurements (Figure 4.12).

Figure 4.12: Sourcing quality photos

During observations students discussed their own problems taking photos for the purpose of assessment.

> *Finding what to take a photo of was difficult and choosing the learning outcome was difficult. (Student)*

Technology

Technology was a limitation that emerged, again closely linked to knowledge and time. Photos were always shared, sourced, or taken using technology, therefore this became integral when using photos. Two areas of concern were briefly highlighted, firstly issues around storage of photos, and secondly relating to devices required to take and display photos. William discussed storage issues could at times be limiting for his usage of photos.

> *I do them [teaching observations] in 'Notability' [app] so all those photos are kept and usually you can add about seven or eight before you run out of space and then it becomes a memory problem. (WILLIAM)*

Lack of devices was discussed, with Theo highlighting that within student cohorts, there was a lack of computer and smart phone access.

> *I asked who had a computer at home…and you'd be amazed at the lack of access.... but they don't because they haven't got that access at home. Yeah and I'm doing it with BYOD [Bring Your Own Device] …so not all of them have smart phones. (THEO)*

4.5.4.2 Copyright and ethical considerations

Copyright of photos and ethical considerations relating to photos of students was discussed, suggesting teachers and students need to be aware of these factors. William explained how he tried to take non-identifying photos to protect students' identity, however this was not always possible.

> *So there's a pre-observation phase where we prepare them for the observation. They know about the photos. No objections whatsoever…I usually say that if any photos are taken we will try to avoid faces and if that does not happen and we cannot do anything else we want to assure them that the photos will not leave ***. (WILLIAM)*

Harry discussed ways of dealing with copyright issues, highlighting the need for students to be both a consumer and a contributor.

If it's been labelled as copyright, then I just prefer to stay away from that…and we certainly teach that but we also teach the idea that we are consumers on the internet but we also need to be producers if we are going to be part of it - so in sharing is part of that and as you share making it attribute it to the owner but free to use. (HARRY)

4.6 Future use

Echoing the point made earlier that innovation would occur, teachers advocated ways photos could be utilised in future, to support teaching and learning, discussing what was needed to ensure this happened. This section will look further at future uses.

4.6.1 Suggestions

Suggestions for future use of photos varied depending on the level of current use. James, the non-user, discussed ways of using photos that were already part of other teacher's practice. He suggested using photos as a discussion point, to draw on students' emotions, and to aid social engagement. He deliberated their potential to motivate students, and how he could encourage students to produce photo-stories, or photo-essays related to their world, in order to motivate and engage learners more.

But they could be taking photos - or actually maybe like a photo-essay. There's always so many things you can do to improve your teaching. When you think about it now - there are things I could do with this… (JAMES)

Andrew saw he could better utilise photos in terms of reflection. While Roxanne discussed how she, and other teachers could further employ digital stories to encourage the narrative.

I think the digital stories - that's my new love - I think because I like the story telling template anyway - I think you could have a digital story without sound or without music and it would still be really powerful - but I think just having that continuous image - I think we are only scraping the surface really - I think we are only scraping the surface because each time I have a different cohort or purpose of teaching I try something else. (ROXANNE)

Roxanne draws attention to the idea that every cohort of learners is unique with their own distinctive needs.

4.6.2 Specialised training

Teachers commented on specific needs for specialised training of students in order to utilise photos to enhance learning, however there was no mention of the need for further teacher training. Andrew would like to see targeted photo training at the beginning of the year, to better prepare students. Likewise, Theo indicated specific training at the beginning of the course would be beneficial to his students.

> *Ideally if I'm talking about taking photos and you had the opportunity you could teach them first about…close ups, mid shots and all those thing you need to know to learn how to take photos. I'd extend the timetable and I'd have an introductory course to show them how to take photos. (THEO)*

These suggestions highlight the very real need for an increased level of VL for both teachers and students to better understand and exploit the use of photos as a teaching and learning tool.

4.7 Conclusion

This chapter presented an overview of perceptions and experiences of teachers and students participating in this study, in relation to use of photos. The data has been analysed and emerging themes discussed, providing evidence that photos are being used for a variety of purposes, and in a variety of ways. The sourcing of photos has been considered, along with 'Huakina', the benefits of using photos to open the door to learning. The limiting factors relating to use of photos have been examined, along with thoughts for future uses. All sections will now be deliberated in more detail within the following chapter.

Chapter Five: Discussion

A photograph is usually looked at- seldom looked into.
Ansel Adams

5.1 Introduction

This chapter begins with a discussion of significant findings, and relevant literature, in relation to key research questions. It commences exploring how photos are used to enhance teaching and learning, then subsequently investigates potential uses. This section provides a suggested model for planning considerations, and a question template for use, acknowledging the need for scaffolding. The chapter will conclude with discussion surrounding visual literacy and the required recognition of this strand of literacy.

5.2 Huakina: Enhancing teaching and learning

This section considers the first research question: In what ways are photos currently used within the tertiary classroom in order to aid teaching, learning and assessment?

As outlined in the previous chapters, within our increasingly visual world, it is undeniable that photos can be utilised to 'open the door' to learning, however, it has become equally apparent this does not just happen. Unless there is careful planning and consideration given by teachers, students will not proceed through the open door and learning will not occur. Teachers need to be prepared to support the opening of the door, putting aside their anxieties as they scaffold learners through the door. The journey we are on is still in its infancy and must be given careful consideration. It is evident there are different ways to use photos upon a continuum of use. The findings presented in chapter four emphasized that teachers realised

benefits of using photos, demonstrating varying degrees of utilisation within tertiary practice. The following section delves into this further under three subsections. The first subsection examines benefits of using students' own photos, while following subsections investigates ways photos can be used illustratively, and explores the benefits of using photos interactively.

5.2.1 Using students' photos

When students are encouraged to use their own photos their engagement in learning is enhanced. By encouraging students to share photos, teachers are validating students' input and experiences, helping to build student confidence, as demonstrated by Andrew within the study. Photos and connected experiences are valued, linking the emotional attachment involved in photos, to student engagement. Andrew, Harry, and Roxanne demonstrated student-sourced use of photos within classes, applying class learning to observations of the world, resulting in enthusiastic engagement and deep learning occurring. Although not commonplace within this study, much literature centred around students using their own photos. When students are encouraged to use their own photos, there is an increase in overall student engagement (Dongre, 2011). There is an emotional element involved in using your own photos which enhances learning. Kates, et al. (2014), argue that flipping the approach to learning by encouraging students to take photos, enhances learning and fosters a deepening of engagement. This highlights the opportunities photos provide for students to direct their own learning through a sharing of knowledge. Kurtz and Wood (2014) assert encouraging students to take photos can "offer them insights into their own experiences by allowing them to make novel connections and conclusions" (p.548).

Conversely, data from the survey cast doubt on the teachers' perceptions of students' ability to use their own photos, which could be a reason for some teachers' lack of enthusiasm for using photos in general. From the study James, William, and Theo did not actively promote the use of student sourced photos. It could be argued, this is an indication there is a lack of willingness to relinquish traditional

teacher-centred methods of teaching, a lack of knowledge and training regarding how to do so, or in William's case it may be a result of the context not allowing for it. Roxanne shared that students were emotionally engaged while taking and sharing photos, but at other times the photos students took uncovered their lack of understanding about the purpose of photos.

> *I think they are quite random. They see someone do something funny, or they are blown away by the scenery – I don't think that they realise the story line that they have set themselves up for until they actually go back and start reflecting. (ROXANNE)*

This highlights a need for teachers to be aware of their responsibility to scaffold students' learning at all stages of the learning process. While we know the standards we strive for in written literacy in academia there should be the same support given to encouraging students VL.

5.2.2 Illustrative use of photos

Illustrative examples of use were found throughout this study, although literature did not offer many examples, which could be indicative of its connection to surface learning, or its normative, everyday use. It was found illustrative uses of photos often occurred at the beginning of classes, giving teachers opportunities to set the scene for content. This use of photos captured students' interests and encouraged them with their visual appeal, which was the first step needed to be built on in the learning activity, underlining need for further planning to ensure learners remain engaged and motivated. Arguably, Bragg and Nicol (2011) contend while an illustrative approach to photos may have some merits, there is an overall lack of function and purpose to this use, linking to a surface approach to learning, which focuses on memorisation rather than understanding (Zepke & Leach, 2011). Likewise, Berry, Schmied and Schrock (2008, p.438) urged teachers to move beyond using photos as "presentational gimmicks" but rather as a source to encourage deeper learning. However, examples offered by teachers in this study provided much pedagogical value. While not always particularly deep, their examples had clear functions and purpose.

Teachers offered instances they used photos to arouse students' interest, while James and Harry explained how students appreciated photos' ability to eliminate long, daunting stretches of text. Additionally, photos played a role in knowledge development by overcoming language barriers and supporting low level literacy, being particularly useful in classes where language or cultural barriers existed, as they provided concrete examples of concepts. Photos can be used in English language classrooms in many ways to aid communication and understanding (Harmer, 2007). Arguably, providing visual connections to language could denote that what is illustrative for some people is interactive for others, providing them with crucial hooks upon which to hang their learning.

There is a cautionary note expressed here as, although technology has allowed us to search quickly for photos of unknown words, such as James demonstrated in the study, there is an inherent risk involved in doing this. When searching for a particular object or concept, resulting photos may not be suitable to be displayed, as unexpected connections can result in objectionable photos. For students, their 'click to find' nature may result in ambiguous outcomes impacting on understanding of complex issues (Purcell, Buchanan & Friedrich, 2013). While illustrative use of photos has merits, it can be concluded that value must be given to the reason and purpose photos are being used, for highlighting teachers' responsibilities. A considered approach to use of photos is needed to eliminate poor use.

5.2.3 Interactive use of photos

Photos were utilised in an interactive manner to encourage construction of knowledge, as they promote deep level thinking enhancing learning, as proposed by Bragg and Nicol (2011). Deep learning encourages learners to make sense of their understandings and to assimilate these new experiences into their prior experiences, with photos playing an integral part of this process, fostering greater perception and deeper meaning (Zepke & Leach, 2011; Brockbank & McGill, 1998). Innate learning occurs when learners are: interested in knowing; are able to connect learning to

prior experiences; can work at a high level connecting theory to concepts; are able to focus on tasks; and enjoy learning (Biggs & Tang, 2007). While this is desirable, it does not happen automatically. The meticulously planned, interactive use of photos can play a fundamental role ensuring knowledge is constructed. This in turn highlights the very important role of teachers at this stage of the teaching-learning process. If teachers plan to use photos in an open-ended, interactive manner, they are able to encourage student engagement and involvement in deep learning. The following section looks at different ways in which photos can be used interactively to enhance teaching and learning.

5.2.3.1 Enhancing student engagement and motivation

Photos were shown to play a central role in engaging and motivating students, enhancing students' commitment and enthusiasm throughout their learning experience, while developing ownership of learning. Andrew, Harry, and Roxanne's students demonstrated enthusiastic engagement in activities relating to photos which was in keeping with the literature (Dongre, 2011; Fanning, 2011; Duncan-Howell & Lee, 2007), with all teachers recording benefits in enhancing students' motivation through photos (Section 4.3.1). Vygotsky (1978/1997) asserts it is up to teachers to choose meaningful and challenging tasks for students to foster ownership of learning, emphasising teachers' responsibility.

Real world connection

Photos were shown to have the ability to bring the outside world into classrooms, encouraging students to make connections between experiences and future work, accentuating relevancy to learning. Photos provided a palpable link to students' current, or future workplace, giving students clarity and understanding. Roxanne, Harry, William Theo and Andrew demonstrated when students were able to link learning to the real world, learning became meaningful, emotions were triggered and there appeared to be a real sense of intrinsic motivation. Students made immediate connections between classrooms and future workplaces, which gave them purpose for their learning. While it is not always possible to give students

experiences outside of classrooms, photos are a key component to link to students' future workplace, giving them a transparent understanding of relevance to their education.

It is important for all learning to be perceived as relevant to learners, and teachers hold the responsibility of getting students involved, and ensuring they are aware of why engagement is necessary (Biggs & Tang, 2007; Race, 2014). Biggs and Tang (2007) assert that a student will learn 80% of what they use and do in real life, stressing importance of relevance for learners. They outlined that students need to picture what they have learned commenting it is "like accessing the book in the library" (p.96). Further, much relevant learning happens outside of classrooms highlighting value in utilising photos, to be able to access the 'library book'. This was demonstrated by Roxanne's account of following up a field trip by discussion of photos which allowed students to have some sort of meaningful link to their practice (*Section 4.3.1.2*). Berry et al. (2008) contend it is the emotions connected with photos, that ascribe memories that are "long-lived, vivid, and detailed" (p.439).

Emotional connection

A principal aspect of photos is their connection with emotions, for both those viewing and taking photos. Roxanne demonstrated that when using students' own photos emotional power was magnified, as there was a connection to students' prior knowledge and experiences which was shared through the photo. Photos provide both teacher and students with a clear link to prior knowledge, which is important within Ako and deep learning approaches. Deep learning is new learning that forms a connection with prior knowledge which "helps to make the connections explicit" (Biggs & Tang, 2007, p.93). James provided an example of encouraging students to bring photos of their home towns half-a-world away, to share with classmates. In sharing prior life photos, students were able to quickly and concisely bridge cultural gaps, learning more about themselves and others which encouraged a sense of belonging, and fostered unforeseen connections.

Historically, emotions have not often been discussed in an academic sense (Bloch, 2016; Berry, et al. 2008; Brown & White, 2010). Brockbank and McGill (1998) argue "emotion is not and rarely has been valued in academic life" (p.46) as it is perceived to be inferior to intellect. However, with an emphasis on student-centred, social constructivist approaches towards learning, it appears realistic that emotions be taken into consideration. Brown and White (2010) discuss merits of emotions' influence on the way in which students construct and engage in learning contexts. Additionally, Zepke (2011) stresses the teachers' role, explaining that teachers should plan to create an 'emotional climate' in learning cycles, to capitalise on emotional dimensions involved in learning. Photos can be trigger points for emotions highlighting their crucial potential in education.

5.2.3.3 Enhancing and developing critical thinking.

The innate nature of photos promotes sharing. In keeping with social constructive approaches, interactive use of photos encourages learning from others, enhancing learning. Findings demonstrated examples that photos enhanced building of knowledge and critical thinking. Teachers provided examples of interactive use of photos, which afforded students opportunities to develop knowledge and critical thinking, in keeping with previous research (Schell et al. 2009; Walter et al. 2012). Both Harry and Andrew demonstrated that as a result of posing open-ended questions, students and teachers could move photos from surface learning into deep, interactive learning (Deale, 2014). In order for students to be able to think critically, they need to examine information through questions, and apply this to theoretical concepts, which was highlighted by teachers within the study.

Both Andrew and Harry afforded students opportunities to develop knowledge through carefully planned activities, aligned with ILOs and assessments, in keeping with constructive alignment views (Biggs & Tang, 2007). They provided examples of students working collaboratively with photos to complete tasks. Andrew followed this up by having students provide questions about the photos for peers to contemplate, presenting opportunities for deep learning. Likewise, Roxanne

provided students with experiences in the form of field trips, which allowed construction of more conscious learning. The ensuing discussion, prompted by photos, allowed students the opportunity to notice, and hold in their minds aspects of the encounter that otherwise may have been forgotten or unexplored. In these examples, students were able to construct their own knowledge through deep learning in accordance with Ako and social constructivist approaches.

Discussion

It is often asserted that it is the story behind photos that is of importance. Roxanne's storytelling called on processes that were familiar to her students by using photos as a prompt, which allowed stories to flow in a similar nature to stories that have been told for generations surrounding whakairo (carvings), on the Marae in keeping with traditional Maori pedagogy. The storytelling process resulted in interactive use of photos through encouraging discussion and offering multilayered perspectives. Students were able to interrogate experiences through photos in-depth as a group. It is via discussion a collective view on pertinent topics can be formed, although this is not always the purpose. Alterio and McDrury (2011) discuss the importance of storytelling, highlighting need for it to incorporate reflective discussion to establish collective understanding, promoting learning. Photos play a critical role in helping support a narrative, promoting discussion and debate, which is imperative for learning according to Vygotsky (1978/1997).

Debate

When introducing potentially sensitive subjects, photos can become theoretical 'scapegoats'. Roxanne used photos purposely chosen to stir emotions and to uncover stereotypes, with the express purpose of unearthing conflicting views, in order to enhance critical thinking and create new awareness (*Section 4.3.1.2*). In this case photos became the central pivot upon which debate was hung, reminiscent of Gil-Glazer's (2015) study and findings. Photos allowed the forum for conversation to be staged. Cook and Quigley (2013) concur contending photos encouraged students to employ "deep and critical analyses of their connections to community and their sense of place to leverage their contributions to conversations…that directly or

indirectly affects their lives" (p.342). It is through photos that opportunities for debate and student empowerment arise, although as Alterio and McDrury (2011) cautioned it is useful to have a pre-agreed-upon set of ground rules for activities that are emotionally loaded.

Reflection

Photos play an instrumental function for reflective purposes (e.g. Kurtz & Wood, 2014; Fanning, 2011; Schell et al., 2009 Power & Morgan, 2010). In contrast to literature, this study only presented a few examples of photos being used for reflective purposes. Both William and Roxanne's planned use of photos as a reflection tool was positive. William's use of photos as evidence for reflection appeared to be very practical in aiding teachers' reflections upon their practice. Roxanne used photos during field trips for students to share as a class later. Students found themselves absorbed in photos and opportunities were created for students to reflect on experiences and assumptions, along with those of peers. It is through interaction with photos that students derive richer understandings, embrace their diverse backgrounds and experiences, and are able to critically reflect.

5.2.3.4 Enhancing relationships and social learning

Photos were seen to be fundamental in building relationships and rapport between teachers and students, an important aspect central to social constructivist views of learning, which is often overlooked. Rapport is essential between teacher and student and is built upon trust and respect (Harmer, 2007). All teachers indicated the collaborative nature of photos helped build connections, encouraging empathy by breaking down barriers, and promoting a reciprocal partnership of knowledge. Within classrooms there can be a complex element of 'power' at play, with teachers being held somewhat apart from students (Brockbank & McGill, 1998). Although there may be an element of vulnerability involved in sharing photos, importantly photos require the person looking at them to do some work, effectively levelling the playing field. The very act of sharing knowledge together fosters a shift in ownership

of learning, encouraging students to take control, or hold tenure of learning, promoting Ako.

This study emphasised fostering relationships via collaborative learning can be enhanced through photos, in keeping with literature (Dongre, 2011; Power & Morgan, 2010). Roxanne, Harry, William, and Andrew's use of photos centred on a reciprocal sharing of learning. Photos were utilised to build relationship between class members through social interaction, co-constructing knowledge, while drawing on Ako and social learning principles. Within Harry's online community, story-telling proved to be valuable, allowing students to connect with each other. This was also observed by Jenkins and Lonsdale (2007) who highlight sharing of digital stories as being both an individual and collaborative form of learning allowing for connections to be made. Additionally, Deale (2014) emphasizes "through the group discussion, a consensus building process takes place that helps to develop a collective view of specific themes in a community" (p.4). It is within social, collaborative, learning situations that photos are bought to the fore. While there is individual investment in taking, selecting, and sharing a photo, there is also the very social aspect of sharing and reflecting, discussing and deliberating what the photo presents in order for learning to be constructed.

5.2.2.6 Assessment

Photos provided a creative and appealing element to assessment. Findings highlighted some innovative and engaging, albeit limited, examples of using photos for assessment purposes. The lack of photos used in assessment through the study appears to be indicative of literature reviewed. Assessment gives the learning process value in students' eyes, and so its absence suggests it is still not taken seriously by either teachers or students. As highlighted in the findings chapter, William, Harry, Roxanne, and Andrew all used photos as evidence of learning. In addition, Andrew's observed assessment task was carefully planned to ensure it aligned with student learning outcomes, in keeping with Biggs and Tang's (2007) views on constructive alignment. The assessment was designed to promote

collaborative learning, with students working together, taking their own photos and sharing tasks in an online forum. These were then used as a collaborative resource for future study, signifying reciprocal learning had occurred. In another example, Andrew explained how photos were being used for assessment in an interactive manner, to provide evidence and to demonstrate students' learning.

> *They have to give me definitions of words and then as part of the definition they had to give me an appropriate photo to prove that the understood the definition. (ANDREW)*

5.3 Huakina: Potential use of photos

This section addresses the second research question: How can photos be utilised further by teachers within the tertiary classroom to assist students' engagement and knowledge development?

The act of participating in the research itself was a trigger for participants to reflect on the potential of the tool. Unsurprisingly James who used photos the least provided the most suggestions, all of which were being used by other teachers. James's suggestions included, using photos as a discussion point, drawing on students' emotions, and aiding social engagement. Roxanne explained her growing interest in using photos in story-telling, which was also deliberated by James. Andrew offered the use of photos for reflective practice as his next focus. Although limited suggestions were made it became evident in order for these to be taken up, changes needed to occur. Theo and Andrew deliberated the need for extra training to ensure students could utilise photos more. James and Theo discussed the need for more time. These suggestions highlight implications for future use of photos, some of which were also offered through the literature (Sandars & Murray, 2009; Johnson et al., 2011; Harvey et al., 2012).

5.4 Huakina: Implications for future use

Although many teachers in the survey acknowledged students enjoyed learning through photos, less than half actually used photos, which could indicate a lack of awareness or knowledge relating to benefits of using photos. It is evident, there is much we can do to improve awareness relating to using photos to enhance teaching and learning. Limitations of the study, coupled with observed benefits for teaching and learning purposes, have provided distinct areas of need to ensure better use of photos. It is apparent photos are not always valued as teaching and learning tools capable of engaging critical thought; rather they are often thought of as superfluous decoration on the side, a view echoed by Rourke and O'Connor (2012) who assert photos are often "seen as an appendage to a lecture even used superficially to take the focus off the speaker" (p.210).

In response to some of the shortcomings that have emerged from teachers' experiences, there are implications regarding optimum use of photos. The following section takes a closer look at perceived measures required for better utilisation of photos based on literature, the study, and my own perceptions.

5.4.1 Careful planning required

Planning for learning is one of the most important responsibilities of a teacher. In order for photos to be more than just a 'bit of decoration on the side', and to benefit students, there needs to be a planned and informed approach to using photos, rather than a haphazard 'she'll be right' attitude. Photos deserve more attention within the tertiary teaching field than they currently receive, needing to be taken beyond the illustrative domain into the interactive sphere. While it is argued students often adopt a more surface approach to their learning, this can be linked to a teaching environment which fails to adopt a deep approach, by providing students with a narrow approach to learning (Race & Pickford, 2007). Care needs to be taken with planning to ensure the 'right' photo is used, along with carefully crafted questions (Fanning, 2011). It is therefore teachers' responsibility to understand that planning for learning, based on sound teaching principles, enhances students'

learning. There are four pivotal areas requiring further consideration to be looked at in the following sections.

5.4.1.1 Constructive alignment

Evident from the research is that, although photos can be hugely beneficial for teaching and learning, there is no substitute for meticulous planning. In reality photos accentuate the need for consideration and careful planning as an important part of the teaching process. It is necessary that teachers avoid surface approaches and focus on engaging students in appropriate and meaningful tasks that foster the 'need-to-know', and are enjoyable. Biggs and Tang (2007) deliberate differences between surface and deeper approaches to learning, asserting that teaching and assessment methods often encourage a surface approach to learning when not aligned to ILOs. They highlight the need for constructive alignment between learning activities, assessments and ILOs, stressing the importance for teachers to get this right (*Figure 5.1*).

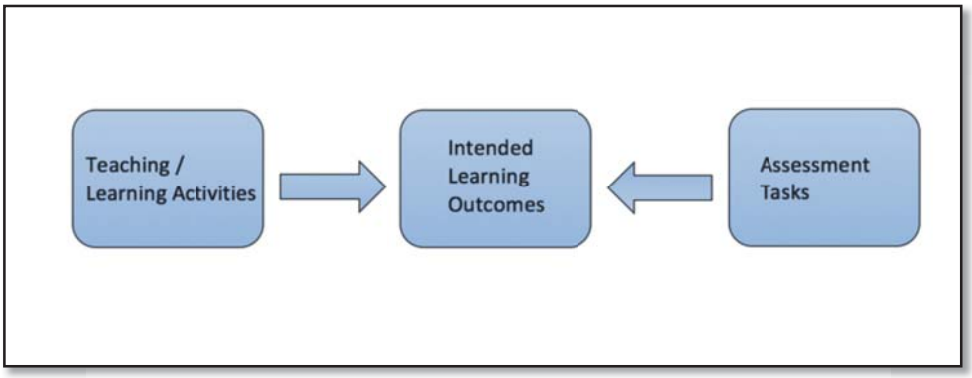

Figure 5.1: Constructive alignment adapted from Biggs and Tang (2007)

One case in particular emphasised the need for careful planning of activities. Theo formulated a large group of activities in an on-line forum, which were intended to support his students' learning. For numerous reasons this on-line task did not work; it was an individual task with no collaborative component; it was not scaffolded, or modelled consistently by the teacher, resulting in students being unable to see perceived benefits; there was no assessment component, meaning students quickly learned these tasks were add-ons, resulting in disengagement from students and a

lack of participation, resulting in an impact on teachers' enthusiasm. Too many seemingly unrelated activities with no connected weighting to students' grade was an 'over-kill' and ensued a lack of student participation (Figure 5.2).

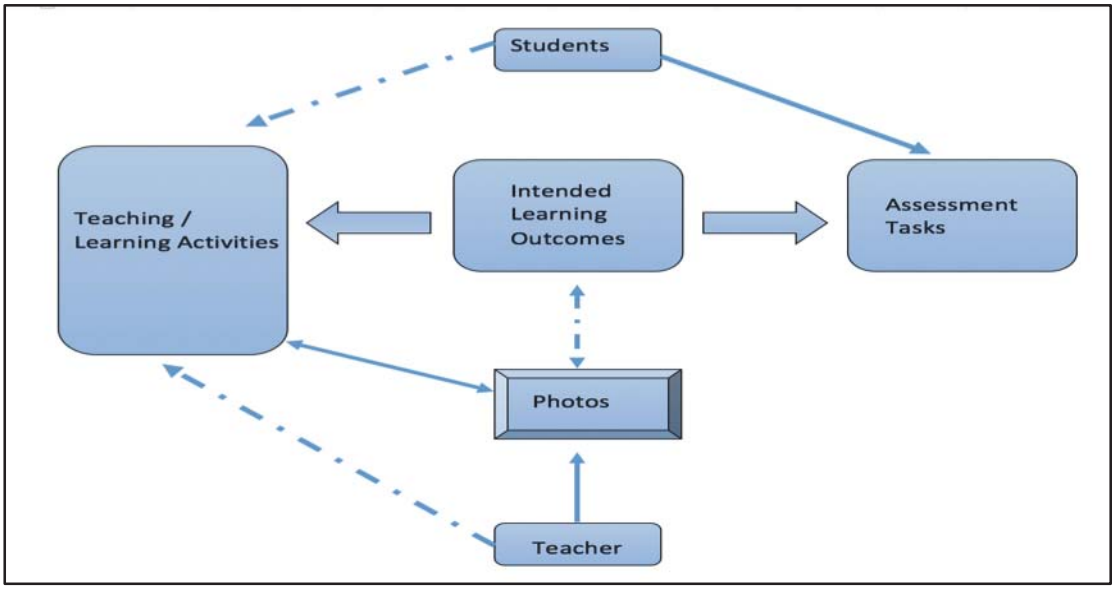

Figure 5.2: Theo's planning process

Over-kill, resulting in diminished engagement is a caution raised by Biggs and Tang (2011) when they highlight the importance of not overloading both students and teachers. The less engaged the student is, the less likely there is to be any creativity or critical thinking (Walter et al., 2012). While observing Theo's enthusiasm for photos becoming diluted due to students' lack of participation, it became apparent that no matter how enthusiastic the teacher is, if the tasks or assessments are not valued by students; if they cannot see relevance of carrying out tasks, they will not complete them and learning will not occur.

Contra to this example, Harry and Andrew's carefully planned online and engineering activities centred firmly on ILOs, interaction, and collaboration, resulting in continued engagement and learning. In much the same way as Andrew did, Harry explained how he carefully planned tasks, modelled ILOs, and as a result it was observed that student participation was high and students continued to be engaged

throughout the duration of the activity, with most students enthusiastically completing tasks.

5.4.1.2 Open-ended question format

The use of a series of planned, open-ended questions, focused on learning objectives, is an effective tool, beneficial in encouraging interactive use of photos, which fosters deep level learning. Consistent with Bragg and Nicol's (2011) stance on the need for photos to be used in an interactive manner in conjunction with carefully designed open-ended questions, Walter et al. (2012) and Deale (2014) provide templates which offer teachers inspiration and a format for potential questions. Walter et al.'s (2012) template is a series of open-ended questions based around the acronym 'PHOTO' while Deale's (2014) is centred on the acronym 'SHOWED'. Given the importance of the concept to this research, I have developed a similar heuristic acronym HUAKINA, demonstrating how teachers can take relevant key words and create a series of open-ended questions (Table 5.1).

Table 5.1: Huakina: Open-ended question formats

HUAKINA	PHOTO	SHOWED
H= WHat do you see when you first view this photo U= Describe your thoughts when YOU look at this photo. A= CAn you think why I (you/peer) might have chosen this photo in particular? K= What linKs can you make to (topic)? I= In what situations do you think others might feel similar/different to you? N= WheN have you seen/felt something similar? A= What Are the implications for your future practice?	P= Describe the Photo H= WHat is happening in your picture? O= Why did yOu take a picture of this? T= What does This picture tell us about (topic)? O= HOw does this photo provide us with opportunities to improve (topic)? Adapted from: (Walter et al., 2012, p.392)	S= What do you See here that relates to (topic)? H= wHat is really happening in relation to (topic)? O= How dOes this relate to (topic) in our lives? W= Why does this problem, condition, or strength exist with regard to (topic)? E= How could this image Educate others about (topic)? D= What can we Do about the particular subject of the photos image's challenges/strengths with regard to (topic) Adapted from: (Deale, 2014)

These questions require the observer, and also the facilitator of questions, to progressively think deeper about the subject concluding by requiring a transfer of knowledge to future practice/work situations. Additionally, they contribute to a reduction in planning time, as they provide the teacher with a heuristic than can be used in a wide range of teaching situations, becoming a useful part of the teaching repertoire. With a series of questions such as these, students are guided through a learning cycle similar to the reflective cycle, with photos providing the *concrete experience* and questions guiding observers through the stages of *reflective observation*, *abstract conceptualisation* and *active experimentation* stages (Kolb, 1984). These can be implemented with photos taken by either teacher or students. In the latter case a framework such as HUAKINA allows students to justify their photo choice, and encourages cohort to find a rationale for each other's photos, creating a shared knowledge.

5.4.1.3 Scaffolding and modelling tasks

The research highlighted need for careful planning that includes scaffolding of tasks. In keeping with Bruner's (1978) views on scaffolding, it was noticeable to see benefits to learning and engagement when tasks were scaffolded and modelled. Both Harry and Andrew demonstrated models of scaffolding valuable to their learners. Their use of photos was deliberated in initial stages of planning, with photos being linked to ILOs from the outset and models of intended use provided. Harry demonstrated the way tasks should be completed on-line, by sharing a model as a guide for students rather than just a list of instructions. Likewise, Andrew provided clear scaffolding, offering tasks within class that introduced students to the intended assessment activities. In Andrew's case, teacher-student roles were reversed in keeping with Ako principles of reciprocal learning; students were generating rather than repeating the knowledge which indicated a deeper level of understanding (Schell et al., 2009). In both cases the scaffolding provided entailed clear direction for students, who consequently carried out tasks with little complication. There is need for students to have sufficient background knowledge of topics, highlighting the need for careful scaffolding (Biggs & Tang, 2007). Walter

et al. (2012), cautioned however, the use of too many examples, as they questioned if examples limit students' creativity when it comes to their own tasks. The engagement and enthusiasm observed during Andrew's class task would suggest this was not an issue with these particular learners.

An example of how important scaffolding and modelling is, can be seen when it is not present. There is at times an unawareness related to the importance of scaffolding, with some teachers seeing it as an added extra for them to squeeze in, rather than an imperative part of the learning cycle. Theo expressed that he did not have time for scaffolding in his busy, content-heavy, programme. Although Theo used many photos within on-line components of his course, students were not engaged with this. When observing both a practical class and a theory class it appeared Theo was not modelling the use of photos, which could have offered students a clear exemplar of expected use. There appeared to be a disparity between his expectations of students and examples given to students, resulting in disappointment for Theo.

5.4.1.4 Time

Having the time to plan for good teaching is crucial, regardless of what tools are being used. As photos are a relatively new pedagogical tool, they will naturally require some initial investment in planning stages; however, as they are assimilated, time required will reduce becoming equivalent to any other teaching tool a teacher may have. Johnson et al. (2011) in their study, reiterate that support must be given by institutions "so that it is not considered a time-consuming 'add on' to lecturers' work, but is a valued component of tertiary teaching" (p.510). Two teachers in the study stressed lack of time for detailed planning, which appears indicative of many teachers today. They proposed that lack of time impacted on their use of photos. James explained, as a result of his hurried and often unplanned lessons, he resorted to teaching the way he learned best, giving limited consideration to the way his students learned best. Likewise, Theo expanded that a lack of time was a large consideration for both his planning and students' work level and resulting

participation. Within literature, time was an issue discussed as a critical aspect of teaching (Given, et al. 2011; Das, 2012; Deale, 2014). Biggs and Tang (2007) assert time-stress due to overloaded content coverage, is a real consideration in teaching environments. They emphasise "if you don't provide the time, you won't get deep engagement" (p.40), highlighting the need for there to be much consideration given to this subject.

Institutions, therefore play a fundamental role in supporting available time for teachers. Within the ITP, Timetabled Teaching Hours (TTH) are based on the level of programme teachers are facilitating on. The two teachers who deliberated lack of time for planning and photos, work on certificate level courses, requiring their TTH to be 20-24 hours a week. In comparison, teachers who were seen to be planning for photos were teaching on undergraduate degree programmes, with expected TTH of 12-16 hours a week (Table 5.2). This is a considerable time difference which appears to impact on teaching. Given the benefits discussed, photos would be very advantageous, particularly at the lower level of study, as they help to bridge gaps in knowledge and literacy levels. However, without adequate time for teacher planning of lessons this is going to be problematic and is an area requiring further consideration by institutions.

Table 5.2: Timetabled Teaching Hours

Band	Primary programme of teaching	TTH/Year/week
Band 1	Certificate	680-825 TTH/Year: 20-24 TTH/week
Band 2	Diploma	544-680 TTH/Year: 16-20 TTH/week
Band 3	Undergraduate degree	408-544 TTH/Year: 12-16 TTH/week
Band 4	Post graduate diploma and degree	340-408 TTH/Year: 10-12 TTH/week

5.4.1.5 A model of use

The factors discussed above are all influential in the planning process. There were examples of carefully planned task, demonstrating sound knowledge of teaching and

learning principles. These displayed detailed planning, careful scaffolding, constructive alignment between ILOs, activities and assessments, and tasks that required interactive collaboration between students, demonstrating reciprocal learning. Their tasks mirrored pedagogical beliefs of social constructivist approaches to learning. Figure 5.3 provides a visual diagram of the complexities involved in planning for interactive use of photos in encouraging a sharing of knowledge and deep level learning.

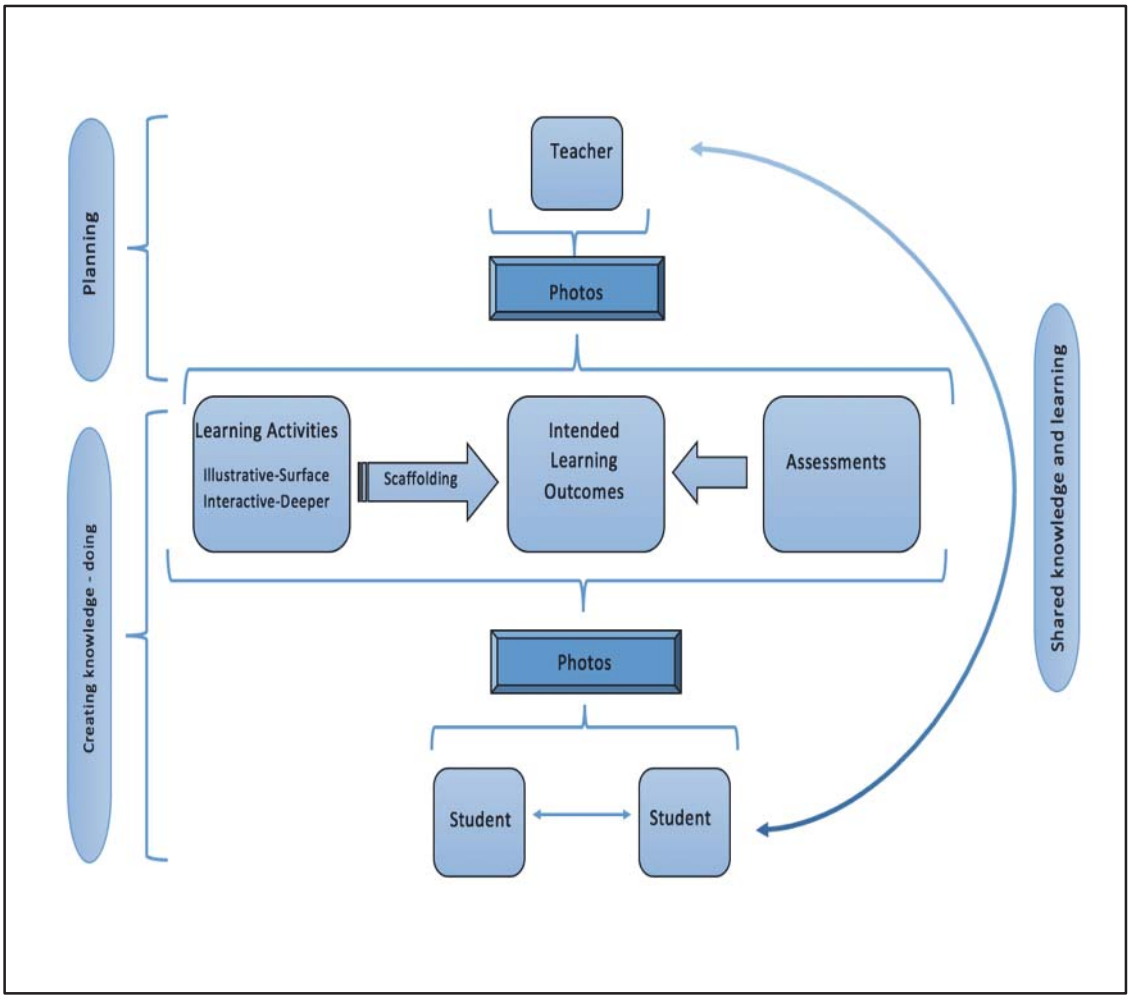

Figure 5.3: A model of use

5.4.2 Visual literacy

Careful planning, however, is not going to embolden teachers and students to capitalise on photos if knowledge, or VL, is not even present. Teachers highlighted the need for students to have great VL. Through discussion Andrew, Harry, Theo,

and Roxanne commented on students' lack of VL. Their concern leads to a question of responsibility: Who is responsible for students' VL? This appears to have been overlooked for too long, with the assumption that within our visually-rich, screen-based world students know how to use photos for academic-purposes, due to their continued fascination with 'selfies' and social-sharing mediums. Although not the case for some, it is apparent students need to develop skills required to critically engage with photos in the academic world. Hattwig, Burgess, Bussert and Medaille (2011) caution that being able to take photos does not necessarily provide a guarantee that students have the ability to use photos academically, concluding "individuals must develop these essential skills to engage capably in a visually-oriented society. Visual literacy empowers individuals to participate fully in a visual culture" (p.1). Additionally, Schönborn and Anderson (2010) highlight the vital importance of VL for gaining understanding, stating that VL "is fundamental to the development of sound conceptual understanding and it is crucial to develop visual skills in parallel with meaningful learning outcomes" (p.347).

Elements of VL that have arisen from this study highlight visual elements need to come together in ways that promote cohesion and relevance. Students and teachers need the ability to be able to use photos effectively and appropriately to construct knowledge. As photos are used to convey complex messages they can be likened to a language which of course takes time to learn and strategic thought. William highlighted the need for contemplation of VL standards, just as those existing for literacy and numeracy standards. There is need for attention to be given to tertiary VL standards that will align with general literacy standards. By defining standards there becomes a value placed on photos which invites further reflection and conversation.

Although much literature discusses the need for students to have a higher level of VL, it became apparent there is equally a need for teachers to develop their own VL and to take responsibility for scaffolding the learning for students in such a way that VL continues to grow and learners are able to manage their own learning. Teachers

must grow their VL, highlighting the need for teacher education programmes which could be used as the initial building block for this knowledge. Bleed (2005) concurs suggesting that VL must be a focus in higher education as students and teachers need to have the ability to interpret and communicate ideas and concepts visually. Surprisingly, Rourke and O'Connor (2012) comment that "many academics cannot agree on what visual literacy skills are or how they should be taught, hence this has become a highly neglected area in higher education" (p.11). This is perhaps an indication of the complete lack of understanding of the complexity of VL. It is hoped that this thesis will make some contribution to an understanding of VL, at least in the field of tertiary education.

5.5 Conclusion

The aim of this study was to explore a group of teachers' use of photos as a teaching, learning and assessment tool within an ITP in New Zealand. In this chapter the key findings have been discussed in the context of the research questions:

- In what ways are photos currently used within the tertiary classroom in order to aid teaching and learning?
- How can photos be utilized further by teachers within the tertiary classroom in order to assist students' understanding, interest and learning?

The key outcomes of the study will be summarised in Chapter six.

Chapter Six: Conclusion

You don't take a photograph. You ask quietly to borrow it.
Unknown

6.1 Introduction

This chapter presents a summary of key findings from Chapter Four which were discussed in Chapter Five. This is followed by a consideration of pedagogical implications for teachers, as well as recommendations for better use of photos within tertiary classrooms. The limitations of the study are discussed before suggestions for further research. This chapter concludes with a brief summary of the preceding chapters.

6.2 Summary of key findings

The primary objective of this research was to explore ways photos were being utilised by ITP teachers to enhance teaching and learning. The study was carried out in a New Zealand ITP investigating teachers from a range of teaching disciplines. A general overview of use was garnered via a survey and more detailed account of use was sought from six teachers. Additionally, an understanding as to how photos could be used more effectively in the future was pursued. Triangulation of data was provided by a range of data collection instruments – survey, interviews, photo-elicitation and observations. Resulting data was analysed in keeping with grounded theory (Charmaz, 2006). The main findings have been summarised below.

6.2.1 Huakina: Enhancing teaching and learning through photos

The results of this study confirmed photos are constructive, creative and provoking tools when used well in tertiary classrooms. They are a means of communication, a

new language within our world, which is yet to be utilised fully. Many benefits were identified for using photos to enhance teaching and learning. It is believed photos can be used in an *illustrative* manner, illuminating concepts through their visual appeal, clarifying ideas, and bringing light-hearted breaks to students. Importantly, it was established that photos could enhance a unique type of deeper, *interactive* learning: Huakina – the opening of the door. The very essence of photos encourages a collaborative, shared learning framework underpinned by Ako and social constructivist beliefs. It is realised that the use of photos enhances student engagement and motivation through the emotional connection and their ability to bring the real world into the classroom (Dongre, 2011; Duncan-Howell & Lee, 2007). Additionally, it was found photos promoted ownership of learning and nurtured an environment of reciprocal teaching and learning which motivated and engaged students (Kurtz & Wood, 2014). Central to social constructivist views, photos were found to stimulate discussion and debate which fostered students' critical thinking.

The research ascertained there were real benefits for student driven photos being used through their propensity for emotional engagement (e.g. Deale, 2014; Given et al. 2011; Kates et al. 2014). Strongly connected to emotional engagement was the reciprocal nature of Ako, where students were encouraged to take and use their own photos, resulting in real benefits for construction of knowledge.

6.2.2 Huakina: Planning for the use of photos

The outcome of this study established many ways in which photos could be used better in the future. It was determined that photos did not eliminate the need for teachers to plan lessons carefully, rather the study highlighted need for teachers to ensure there was constructive alignment between ILOs, learning tasks and assessments. Failing to plan carefully could lead to failure to engage and complete (Biggs & Tang, 2007).

The research determined there were definite benefits in using open-ended questions to encourage interactive use of photos and to foster students' critical thinking and

reflection in relation to photos. Crucial to their success was understanding that photos did not eliminate the need for careful scaffolding and modelling in order for students to complete the tasks; rather it highlighted that scaffolding must be viewed as a central part of teaching and not a time-consuming extra. Time, or rather a lack of time, was seen as being instrumental in the lack of use.

6.3 Implications

The results of the study confirmed photos are beneficial in tertiary contexts as a teaching and learning tool. Clearly an increased knowledge and understanding of how photos could be used in order for potential benefits to be effective within classrooms is necessary, signifying the need for further professional development of teachers.

Teachers can ensure better use of photos, however as with all good teaching activities, they require careful planning and constructive alignment between ILOs and activities. Teachers, and institutions, need to prioritise time and professional development to enable teachers to plan for learning to happen. This is an area requiring consideration from institutions as time-stressed teachers are not spending time planning sufficiently to ensure their 'good' teaching promotes 'good' learning.

VL is important in order for photos to be capitalized on. Consideration should be given to ensuring clear guidelines are delineated as to what VL actually looks like. It ought not be taken for granted that just because photos are such a huge part of our lives that we know how to utilise them to stimulate learning. Recognition of photos as part of a universal language needs to be considered. Teachers should build their own VL in order to build students' VL. More professional development for teachers is required to foster both teacher and student VL.

Taking all these considerations into account, along with the social-constructivist views of teaching, a model for the use of photos is proposed (Figure 5.3). In order to

plan and use photos successfully the study highlighted the need for visual literacy as a real consideration. Both teachers and students need to develop essential skills to ensure that they are capitalising on the many benefits of photos. There needs to be a shared understanding of how to use photos to develop conceptual understanding.

6.4 Limitations of the study

The results have provided evidence of benefits of photos as a teaching and learning tool and have shed light on ways this can be done, giving suggestions for future use of photos.

The most obvious limitation in this research was this was a small number of responses to the survey, perhaps a result of initial methods of distributing. For further research the method of distribution should be reassessed, in hope that a larger number of participants be involved in this stage of the research. The main focus of the study, however was the interviews. This was a small scale study which chose a methodology that promoted depth of understanding of teachers' lived experience above generalisability. For this purpose, six participants was a suitable number.

The research design gave prominence to the teacher voice as a first line of inquiry. There was some, but limited, place for student comment which could open up the need for further research.

6.5 Suggestions for further research

This research has shown potential for photos to be used more as a teaching and learning tool. As the research sought to foreground the teachers' experiences and views it was not focused on the students' responses in particular. In order to gain a different perspective and complex view surrounding benefits of using photos, further research could be conducted foregrounding the students' perspectives.

Additionally, in order to understand more about the perceived benefits of photos it is suggested that an intervention study be conducted, whereby two parallel classes are studied and compared. One class would be strategically and regularly exposed to the Huakina model, while the second class would be the 'control' whereby no photos would be included, enabling greater understanding of the benefits of photos to the quality of learning. Furthermore, researching other teaching contexts with more intensive and wider data gathering could derive better understanding.

Finally, further investigating the nature of VL should be carried out with the intention of contributing to a set of standards which is acceptable to teachers.

6.6 Concluding Remarks

The primary purpose of this study was to investigate teachers current use of photos in tertiary contexts and to look at ways in which they could be used further to enhance teaching and learning. To this end the findings from this study provide valuable evidence that there are considerable benefits in using photos to enhance students learning and engagement. Results point to pedagogical implications for teachers, suggesting there is need for teachers to have increased awareness of careful planning and scaffolding for teaching, in order to get the most from their inclusion of photos. More professional development is required in order for teachers to truly benefit from the boundless potential photos proffer. Finally, thought must be given to the establishment of clear visual literacy standards for tertiary level students.

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Appendices

Appendix 1: Ethics approval

MASSEY UNIVERSITY
ALBANY

24 June 2015

Adrianne Haultain
530 Boyd Road
RD1
Taupiri

Dear Adrianne

Re: Picture Perfect: The potential of pictures in the tertiary classroom

Thank you for your Low Risk Notification which was received on 15 June 2015.

Your project has been recorded on the Low Risk Database which is reported in the Annual Report of the Massey University Human Ethics Committees.

You are reminded that staff researchers and supervisors are fully responsible for ensuring that the information in the low risk notification has met the requirements and guidelines for submission of a low risk notification.

The low risk notification for this project is valid for a maximum of three years.

Please notify me if situations subsequently occur which cause you to reconsider your initial ethical analysis that it is safe to proceed without approval by one of the University's Human Ethics Committees.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

A reminder to include the following statement on all public documents:

> *"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.*
>
> *If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Dr Brian Finch, Director (Research Ethics), telephone 06 356 9099, extn 86015, e-mail humanethics@massey.ac.nz".*

Please note that if a sponsoring organisation, funding authority or a journal in which you wish to publish requires evidence of committee approval (with an approval number), you will have to provide a full application to one of the University's Human Ethics Committees. You should also note that such an approval can only be provided prior to the commencement of the research.

Yours sincerely

Brian T Finch (Dr)
Chair, Human Ethics Chairs' Committee and
Director (Research Ethics)

cc Mrs Linda Rowan and Dr Gillian Skyrme
Institute of Education
Palmerston North

Professor John O'Neill
Director of the Institute of Education
Palmerston North

Appendix 2a: Information letters

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MĀTAURANGA

Picture Perfect: The potential of pictures in the tertiary classroom

INFORMATION SHEET (Case Study Participants)

Researcher Introduction

Thank you for expressing an interest in taking part in my research. My name is Adrienne (Adie) Haultain. I am a Senior Academic Staff member in the School of Education at [redacted] and I am currently completing my Master in Education (Tertiary) through Massey University. In order to complete my thesis I am conducting a mixed methods research project into the use of photographs within the tertiary classroom as a teaching and assessment tool.

Project Description and Invitation

The purpose of this research project is to gain an understanding into the ways in which photos are currently being utilised within the tertiary classroom to enhance teaching, learning and assessment, in order to build a framework for more effective use in the future.

I would like to invite you to be a participant in this research project.

Participant Identification and Recruitment

- *As part of the above survey, respondents will indicate if they are willing to become be included further as participants of this research project.*
- *No more than five teacher participants will be sought, as this is a small-scale case [redacted]. These participants will be selected to maximise a cross-section of discipline contexts within [redacted].*
- *Students from the participant's class will also be asked to participate in aspects of the project.*
- *There are no perceived discomforts or risks to participants as a result of participation in this project.*

Project Procedures

It is intended that you take part in the following steps:

- ***Semi-structured individual interview**: The researcher will conduct this. You will be asked to share photographs taken by yourself, which are relevant to this project. (1-hour approx.)*
- ***Observation:** The researcher will complete up to three observations of you teaching with photos. During the observations the researcher may take photos. The number of observations and the times for the observations will be negotiated between you and the researcher and will be arranged at our mutual convenience.*
- ***Follow-up:** The observations may be followed up by email or phone for clarification purposes. Clarification questions for the students will be developed in consultation with you during this follow-up session.*
- ***Focus Group Interview**: The researcher will present the developed framework and will seek feedback from the Case Study participants as a group. (1-hour approx.)*
- *There are no perceived conflicts of financial interest and/or roles within this project.*

Data Management

- *All data gathered will only be used in relation to this project.*
- *Interviews will be recorded and the researcher will transcribe relevant sections at a later date.*
  - *The transcripts will be sent to the participants to ensure that they agree with the transcripts. If there are no objections within two weeks the data will be used. Field notes and photographs*

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will be taken during the observations. All of the audio recordings will be kept in a secure place and will be destroyed five years after the completion of the research.

- *The data will be used to help develop a framework for best practice of use of photographs within the tertiary classroom. The data collected will contribute to my Master thesis. This will be accessible from the Massey University Library. The collected data, and/or parts of the data, may also be used in future publications or presentations.*
- *Throughout this project your confidentiality and identity will be preserved. Pseudonyms will be used throughout to help ensure this.*

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 particular question;*
- *withdraw from the study at any stage up until the first observation;*
- *ask any questions about the study at any time during participation;*
- *provide information on the understanding that your name will not be used unless you give permission to the researcher;*
- *be given access to a summary of the project findings when it is concluded if desired.*
- *ask for the recorder to be turned off at any time during interviews.*

LOW RISK NOTIFICATIONS

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Project Contacts

If you have any further questions or concerns you can contact any of the following:

Researcher: Adie Haultain
Email: [redacted]
Ph: (0[redacted]

Supervisors: Linda Rowan
Email: L.M.Rowan@massey.ac.nz
Ph: (06) 3569099 extn 84469
Gillian Skyrme
Email: G.R.Skyrme@massey.ac.nz
Ph: (06) 3569099 extn 83672

Appendix 2b: Information letters

MASSEY UNIVERSITY
INSTITUTE OF EDUCATION
TE KURA O TE MĀTAURANGA

Picture Perfect: The potential of pictures in the tertiary classroom

INFORMATION SHEET (Student Participants)

Researcher Introduction

My name i[redacted] (Adie) Haultain. I am a Senior Academic Staff member in the School of Education a[redacted]d I am currently completing my Master in Education (Tertiary) through Massey University. In order to complete my thesis I am conducting a mixed methods research project into the use of photographs within the tertiary classroom as a teaching and assessment tool.

Project Description and Invitation

The purpose of this research project is to gain an understanding into the ways in which photos are currently being utilised within the tertiary classroom to enhance teaching, learning and assessment, in order to build a framework for more effective use in the future.

As your teacher has agreed to being observed by me, I would like to invite you to be a participant in this research project.

Participant Identification and Recruitment

- *You have been asked to take part in this research project, as your teacher is a Case Study participant of this research project.*
- *There are no perceived discomforts or risks to you as a result of participation in this project.*

Project Procedures

It is intended that you take part in the following way:

- ***Observation:** The researcher will complete an observation of your class. During this time the researcher will take notes and photographs. You will not be required to do anything beyond participate in the class as you normally would.*
- *Response Sheet: Participants who have indicated their willingness may be provided a response sheet following the observations for clarification purposes*
- *There are no perceived conflicts of roles within this project.*

Data Management

- *All data gathered will only be used in relation to this project.*
- *Field notes and photographs will be taken during the observations. All of the data will be kept in a secure place and will be destroyed upon completion of the project.*
- *The data will be used to help develop a framework for best practice of use of photographs within the tertiary classroom. The data collected will contribute to the discussion section of the Master thesis. This will be accessible from the Massey University Library. Data may also be used in future publications and presentations.*
- *Throughout this project your confidentiality and identity will be preserved. Pseudonyms will be used throughout to help ensure this. Any photos used in publications or presentations will not disclose your identity unless express permission is gained.*

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 particular question;*

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- *withdraw from the study at any time up until the conclusion of the observation;*
- *ask any questions about the study at any time during participation;*
- *provide information on the understanding that your name will not be used unless you give permission to the researcher;*
- *be given access to a summary of the project findings when it is concluded if desired.*

If you decide not to participate I will organise the seating so that you will not be in the focus of my observation

LOW RISK NOTIFICATIONS

"This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Professor John O'Neill, Director, Research Ethics, telephone 06 350 5249, email humanethics@massey.ac.nz".

Project Contacts

If you have any further questions or concerns you can contact any of the following:

Researcher: Adie Haultain
Email: [redacted]
Ph: (07) [redacted]

Supervisors: Linda Rowan
Email: L.M.Rowan@massey.ac.nz
Ph: (06) 3569099 extn 84469
Gillian Skyrme
Email: G.R.Skyrme@massey.ac.nz
Ph: (06) 3569099 extn 83672

Appendix 3a: Consent forms

MASSEY UNIVERSITY
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TE KURA O TE MĀTAURANGA

Picture Perfect: The potential of pictures in the tertiary classroom

PARTICIPANT (Case Study) CONSENT FORM - INDIVIDUAL

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to the interview being sound recorded.

I agree/do not agree to the interview being image recorded.

I wish/do not wish to have my recordings returned to me.

I wish/do not wish to have data placed in an official archive.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: _____ **Date:** _____

Full Name - printed _____

Appendix 3b: Consent forms

MASSEY UNIVERSITY
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Picture Perfect: The potential of pictures in the tertiary classroom

PARTICIPANT (Student) CONSENT FORM - INDIVIDUAL

I have read the Information Sheet and have had the details of the study explained to me. My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree/do not agree to being observed by the researcher.

I agree/do not agree to answer questions following the class, from the researcher.

I agree/do not agree to being included if the class is being photographed.

I wish/do not wish to have my individual data placed in an official archive.

I agree/ do not agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... Date: .....

Full Name - printed .....

Appendix 4: Survey questions

Using photographs in the classroom
These days' technology gives us the means of taking photos wherever we go. This appears to have great potential in enhancing our teaching materials, and I am interested in whether, and if so how, staff are using this tool. I am interested in understanding how photos (taken either by yourself or someone else) are currently being used within the tertiary classroom. I appreciate you taking the time to complete this survey. Your answers will help me with the initial stages of my research. Please answer as many questions as you can. Thank you for your time.

The following questions will give me some background information about you.
Q1 What is your gender?

- ❍ Male (1)
- ❍ Female (2)

Q2 What School or Centre do you teach in at

Q3 What level of programme do you currently teach?

Q4 How long have you been teaching within a tertiary context?

- ❍ 1-4 years (1)
- ❍ 5-9 years (2)
- ❍ 10 + years (3)

Q5 What teaching related qualifications do you hold?

The following questions relate to the context of using photos as a teaching tool within the tertiary classroom.
Q6 Do you use photos as a teaching tool?

- ❍ Yes (1)
- ❍ No (2)
- ❍ Sometimes (3)

Q7 Have you heard of the term 'photo elicitation'?

- ❍ Yes (1)
- ❍ No (2)

Answer If Do you use photos as a teaching tool? No Is Not Selected
Q8 Do you think that your students enjoy your use of photos?

- ❍ Yes (1)
- ❍ Maybe (2)
- ❍ No (3)

Answer If Do you have any ethical concerns surrounding using photos in the classroom? Please explain your choice. No Is Selected
Q9 Please give the main reasons why you choose not to use photos as a teaching tool.

- ❑ Lack of time (1)
- ❑ Ethical concerns (2)
- ❑ Copyright concerns (3)
- ❑ Difficulty finding the 'right' photo (4)
- ❑ No benefit perceived (5)
- ❑ Other (6) _____
- ❑ Please explain (7) _____

Answer If Do you use photos as a teaching tool? No Is Not Selected
Q10 Which of the following are applicable to you? You may choose as many answers as you wish. The photos I use are usually:

- ❑ Taken by me. (6)
- ❑ Taken by students (7)
- ❑ From another source (8)
- ❑ Other. Please explain (9) _____

Answer If Do you have any ethical concerns surrounding using photos in the classroom? Please explain your choice. No Is Not Selected

Q11 Please indicate which of the following purposes you use photographs for, and the frequency of use.

	More than once a week (1)	Once a week (2)	Once a month (3)	Once a semester (4)	More rarely (5)
To introduce new concepts (1)	❍	❍	❍	❍	❍
To promote discussion (2)	❍	❍	❍	❍	❍
To promote critical thinking (3)	❍	❍	❍	❍	❍
To promote creative thinking (4)	❍	❍	❍	❍	❍
To aid reflection (5)	❍	❍	❍	❍	❍
To create visually appealing information (6)	❍	❍	❍	❍	❍
To give a lighthearted change (7)	❍	❍	❍	❍	❍
To help bridge language barriers (8)	❍	❍	❍	❍	❍
To help bridge cultural gaps (9)	❍	❍	❍	❍	❍
Other (please comment) (10)	❍	❍	❍	❍	❍

Answer If Which of the following are applicable? Are the photos you use: Taken by your students? Is Selected

Q12 In what areas of teaching do you use your students' photos? Choose the most relevant.

- ❑ Evidence of learning (1)
- ❑ Promote reflection (2)
- ❑ Promote discussion (3)
- ❑ Other (4) _____

Q13 Do you think that students are able to use photos to critically reflect?

- ❍ Yes (1)
- ❍ Maybe (2)
- ❍ No (3)

Q14 Do you think that students respond favourably to activities which require them to take their own photos?

- ❍ Yes (1)
- ❍ Sometimes (2)
- ❍ No (3)

Answer If Do you think that students generally have adequate knowledge surrounding the use of photos to por... Yes Is Not Selected

Q15 What do you believe students need to know in order to be able to utilise photos more effectively in an academic setting?

Q16 How do you go about choosing appropriate photos to use?

Q17 Do you have any ethical concerns surrounding using photos in the classroom? Please explain your choice in the text box below.

- ❍ Yes (1) _____
- ❍ No (2) _____

The following questions relate to the use of photos within assessment.

Q18 Do you use, or have you ever used, photos as part of your assessment process?

- ❍ Yes (1)
- ❍ No (2)

Answer If Do you use photos as part of your assessment process? Yes Is Selected

Q19 How effective do you find the use of photos in the assessment of your students?

- ❍ Very Ineffective (1)
- ❍ Ineffective (2)
- ❍ Somewhat Ineffective (3)
- ❍ Neither Effective nor Ineffective (4)
- ❍ Somewhat Effective (5)
- ❍ Effective (6)
- ❍ Very Effective (7)
- ❍ Optional comments (8) _____

Answer If Do you use, or have you ever used, photos as part of your assessment process? Yes Is Selected

Q20 When you use photos for assessment purposes who is responsible for taking the photographs?

- ❍ The teacher (1)
- ❍ The student (2)
- ❍ Other sources (3)

Answer If Do you use photos as part of your assessment process? Yes Is Selected

Q21 Have you used or asked your students to use photos in any of the following ways?

	Often (1)	Sometimes (2)	Never (3)
Photo essay (1)	❍	❍	❍
As evidence of learning (2)	❍	❍	❍
As a reflection of learning (3)	❍	❍	❍
As part of an exam paper (4)	❍	❍	❍
Other (5)	❍	❍	❍

Answer If Do you use, or have you ever used, photos as part of your assessment process? No Is Selected

Q22 What are the reasons that stop you using photos within your students' assessments?

Answer If Do you use, or have you ever used, photos as part of your assessment process? Yes Is Selected

Q23 Do you have any issues with marking assessments that use photos as evidence for learning? Please give reasons for your answers.

- ❍ Yes (1) _____
- ❍ No (2) _____

I greatly appreciate your participation in this questionnaire. I am hoping to follow up this questionnaire by conducting some further research into the potential use of photos as a teaching and assessment tool. If you are interested in taking part in further research surrounding the use of photos in the classroom, please enter your details below.

Name (1)
Email (2)
Phone (3)

Appendix 5: Interview guide

Thank you for volunteering to be part of my research study: ***Outline project*** ***Ethics/consent forms*** ***Tell me a little about yourself***	
Teaching discussion (20 mins)	**Prompts**
I'm interested in understanding how you currently use photos within your teaching context. 1. In what ways are you currently using photos as a teaching tool? 2. What do you see as the benefits of using photos? 3. Could you explain for me how you choose photos to use? 4. Are there any issues in using photos in the classroom? How do you overcome these? 5. Do you feel that you are utilising photos as much as you could? What might help you to use photos more?	 Introduce theory, aid reflection, encourage discussion, understanding of issues. Where in lessons do you generally use them? Teacher or Student driven Abstract or real Ethics? Copyright? More training? Ease of access to photos? Guidelines?
Assessment discussion (20 Mins)	**Prompts**
I'm interested in your use of photos as an assessment tool. 1. Have you ever used photos as part of an assessment? Could you explain how this work? 2. What were the results? 3. Do you perceive the use of photos in assessment to be difficult to assess against more traditional assessments? 4. Do you think students have an adequate understanding of ways in which they can use photos? What more could be done?	 Student production/ photo story/ photo essay/ presentation Pass rates? Up-take of use if this was an option Training? More practice?
Photo elicitation (20 mins)	**Prompts**
Before this interview you were asked to take photos of ways in which you feel photos have helped you within your teaching and assessment. Would you please share the photos you have brought along today…	Tell me about this photo… Why did you choose this? What does it represent to you? How did it help with your students learning?
Thank you for taking part….. I will transcribe the interview and return the transcript to you to read and approve.	