School of Education

Associations between Interpersonal Behaviour, Cultural Background, Achievement and Engagement in New Zealand Tertiary Blended Learning Environments: A Case Study

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Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgement has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any other university.

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Abstract

This thesis explores the perceptions of students and teachers regarding learning and teaching in blended learning environments. The research is based on findings from a mixed-method, single case study conducted at a New Zealand institute of technology.

This study highlights the blended learning environment as a rapidly evolving setting that is ubiquitous in New Zealand and globally in tertiary education. Numerous studies have examined blended learning in secondary school contexts, however, research in New Zealand higher education remains limited.

This study used a mixed methodology, combining quantitative and qualitative data gathering methods, which provided a rich data set that offered insights into student and teacher perceptions of the blended learning environment. The Questionnaire on Teacher Interaction and the Student Engagement Questionnaire formed a major part of the Teacher Interaction and Student Engagement Questionnaire designed for this study. A unique feature of this study is that it also asked students a range of open-ended questions to investigate their perceptions of their blended learning classrooms. Based on participants' responses to the Teacher Interaction and Student Engagement Questionnaire, focus group interviews were conducted with a selected sample of respondents.

This study's results are discussed in the context of the existing body of knowledge on classroom environment research. This study contributes to the field by exploring intersections with the blended learning environment, particularly in terms of achievement and engagement, and considering students' gender and cultural background. Students were found to have generally positive perceptions of the blended learning environment. They were of the view that teachers are better at providing feedback in the face-to-face learning environment than the online learning environment. Students also suggested that management and administrators need a consultative approach involving all relevant stakeholders regarding how and when physical and virtual classrooms are utilised to meet student learning needs effectively. When students responded to questions relating to their teachers, gender differences were evident with female students rating their teachers higher than male students.

There were also discernible differences in how students from different cultural backgrounds perceived their teacher's behaviour and the expectations they had of their teachers. Based on the results of this study it was concluded that teachers need to be better equipped to provide feedback online to support students to achieve better outcomes. Also, the intentional planning to realise the transformative potential of blended learning environments by policymakers is desirable and necessary. Teachers' cultural awareness and competence in diverse classrooms like the ones in this study, have the potential to improve student outcomes.

Since blended learning environments are now commonplace in higher education, this study may enable all stakeholders involved in this enterprise to better understand the many challenges faced in the optimum design, development, delivery and evaluation of blended learning programs to enable better student learning outcomes.

I dedicate this doctorate to my late parents, Bobby and Mary Pillay, inspirational educational leaders in their own right.

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List of Abbreviations

AC	Academic Challenge
AL	Active Learning
ANOVA	Analysis of variance
AUSSE	Australasian Survey of Student Engagement
CES	Classroom Environment Scale
CoI	Community of Inquiry
CUCEI	College and University Classroom Environment Inventory
DELES	Distance Education Learning Environment Survey
DOLES	Distance and Open Learning Environment Survey
EEE	Enriching Educational Experiences
ERT	Emergency remote teaching
INES	Indicators of Education Systems
ITP	Institutes of Technology and Polytechnics
JASP	Jeffrey's Amazing Statistics Program
LCMS	Learning content management system
LEI	Learning Environment Inventory
LMS	Learning management system
MCI	My Class Inventory
MITB	Model for Interpersonal Behaviour
PLEQ	Perceptions of Learning Environment Questionnaire
QTI	Questionnaire on Teacher Interaction
SEQ	Student Engagement Questionnaire
SSI	Student and Staff Interactions
TISEQ	Teacher Interaction and Student Engagement Questionnaire
TOSRA	Test of Science-Related Attitudes
WebLEI	Web-Based Learning Environment Inventory
WIHIC	What is Happening In This Classroom

Chapter 1: Introduction

This thesis investigates student and teacher perceptions of learning and teaching within blended learning environments. The blended learning environment is a relatively new environment that combines teacher and learner inputs and outputs in a dynamic combination of face-to-face and online interactions. This environment is enabling because it does not rely solely on physical space or internet connectivity. This differs from traditional, wholly face-to-face teaching and its opposite, wholly online teaching. While blended learning environments are enabling, this study is motivated by the fundamental question: What is the impact of this environment on learners and their teachers?

The following sections of this chapter presents information for this study into student and teacher perceptions of the blended learning environment. This includes the thesis origin, research background, research aim and objectives, study limitations, significance of the research, an overview of the methodology, and an outline of the thesis.

1.1 Thesis Origin

At the time this study commenced, the researcher was working at a tertiary institution in Auckland, New Zealand (NZ). Based on personal observations and discussions with academic staff in 2012, blended learning at that institution seemed like a buzz phrase, as many people were trying to combine face-to-face learning with online learning with different motivations. Some were genuinely concerned with improving learners' achievement and engagement in their classes, and blending face-to-face learning with online learning provided another way to achieve this. Others wanted to opt out of face-to-face classroom contact to enable them to engage in other activities during the workday and interact with learners when it was convenient for them, late in the evening, for example. There were also some teachers who wanted to meet the needs of learners who could not attend scheduled classes during the day owing to family or work commitments. Hence, the blended learning option solved the problem of learners who had difficulties attending classes.

At the same time, the institution's management team wanted to explore the use of blended learning to reduce classroom contact time and increase online learning time out of class. Some teaching staff I talked to then were sceptical about the management team's

motivation to make the change. Other teaching staff welcomed the opportunity to use blended learning. The first group felt that the shift to blended learning was a deliberate attempt to reduce the classroom contact time so that teaching staff could be allocated more classes to teach. The other group felt that shifting to blended learning was a worthwhile teaching and learning decision because it would meet their and the students' needs. This view was founded on the idea that using technologies that learners already used in their social and home contexts would enable better learning and teaching. The first group resisted blended learning initiatives, and the second group became 'early adopters' (Rodgers, 2003).

The researcher was teaching two classes at the time and used the blended learning environment in both these classes with high rates of achievement and engagement as evidenced by students' achievement scores and feedback in end-of-course surveys. However, most other teachers were teaching in predominantly face-to-face classes. The researcher supported management's initiative to adopt a blended learning strategy across the institute, given the success experienced in the blended learning classes taught by the researcher and other teaching colleagues. The researcher was keen to investigate how learners' achievement and engagement would be affected by introducing them to blended learning environments, where face-to-face and online learning were combined.

As a starting point, a group of interested lecturers gathered to work with the researcher to advance their online learning skills (using blogs, wikis and Facebook) and explore ways in which they could integrate online and face-to-face learning into their courses. This group created a community of practice who shared their thinking about the impact of blended learning environments on their learners and themselves as teachers. With limited functionality, Blackboard was being used as the learning management system (LMS). Anecdotally, the teachers shared the view that the LMS was limiting because it was used more as a document repository and less as an interactive teaching tool. These teachers felt that to engage learners in any collaborative learning or exchanging of ideas with the teacher and their peers, other social media tools were needed. These tools afforded the teacher greater interaction with learners and also allowed learners to interact with each other without the teacher initiating conversation threads.

Students in classes these teachers taught were encouraged to use social media platforms like blogs, wikis and Facebook to communicate with each other, record their learning,

keep project teamwork records and discuss assessments. These students were excited by this ‘new’ approach and appeared more engaged in and out of class, irrespective of age, gender and ethnic background. This reaction warranted further scrutiny.

At the same time, while the teaching staff and the institution’s management were engaging with blended learning theory and practice, the students were simply passive recipients of a ‘new way of learning’. Very few considered the learners or their experiences in this changed environment and whether this environment affected their achievement and engagement. The researcher’s personal interest was piqued. Consequently, the researcher conducted an initial study on using Web 2.0 technologies (see Pillay, 2013) for learning and teaching. Students from different gender groups and cultural backgrounds were the subjects of this study. One of the findings of this study was that the students exposed to the blended learning environment indicated that they were more engaged with digital out-of-class activity, which enabled them to contribute more effectively to class discussions and achieve better marks (Pillay, 2013). The perceived increase in their engagement and achievement scores warranted further investigation. Similarly, the differences in students’ responses from different gender groups and cultural backgrounds provided impetus for further enquiry.

At about this time, the researcher commenced preparing the application for candidature. The researcher wanted to lead an enquiry into students’ and teachers’ views on the blended learning environment and its impact on teaching and learning. Did it help learners achieve better? Did it enable teachers to achieve better student outcomes? Where students more engaged in this environment when compared with the wholly face-to-face classroom environment? What were the teachers’ views of this environment and its impact on them and their students? While the institution’s management was intent on implementing blended learning across the whole institute as a strategic imperative, there was very little consultation with staff and no consultation with students. The researcher’s view was that investigating teachers’ and students’ perceptions of their teaching and learning experiences in the blended environment would provide useful information to inform the strategy and implementation of the institute’s blended learning policy. Hence, this study was initiated.

1.2 Background

This section provides the background for this study by giving an account of the institutional environment in which this research was conducted. This is followed by a description of the blended learning environment and an outline of the key concepts and details that underpin this study.

Tertiary institutions in NZ increasingly focused on student retention and success since this was the basis on which they received funding, as reported in the Tertiary Education Commission Report on Educational Achievement Indicators (2010). However, as Fraser (2001) observed, judging student performance only on the basis of achievement can devalue the human qualities that make education a worthwhile experience for students. Researching the learning environments that students and teachers find themselves in is a meaningful enterprise in that it brings the human interaction that happens in learning spaces to the forefront and, in some ways, shifts the focus away from student achievement per se (Fraser, 2001). There is great interest in this field of the human interaction which takes place in classrooms between teachers and students, evidenced by research aimed at conceptualising and assessing learning environments (Chang & Fisher, 2003; Skelton, 2007; and as detailed in Fraser et al., 2012).

In 2010, some tertiary institutions in NZ started shifting from a predominantly face-to-face delivery model to blended delivery, that is, using a combination of web-supported learning environments and face-to-face learning environments in delivering courses and programs of study (Smythe, 2011). At the time this study commenced, some institutions were doing this as a part of their overall strategic planning process (Manukau Institute of Technology, Nelson Marlborough Institute of Technology, Unitec and Bay of Plenty Polytechnic).

Fraser (2001) justified the endeavour of researching learning environments by suggesting that giving exclusive attention to achievement can cause the detrimental effect of negating the human qualities that make education a worthwhile experience for students. He further argued that while curricula consist of content and outcomes, they also consist of physical spaces and classrooms where learning takes place. He then made the point that, “It is the quality of life lived in classrooms that determine many of the things that we hope for from

education—concern for community, concern for others commitment, to the task at hand" (Fraser, 2001, p. 2).

These physical and virtual spaces where learning takes place are central to this study. In the next section, learning environment research is discussed to locate the blended learning environment research in this study within this overall body of knowledge.

1.2.1 Learning Environment Research

The essence of a learning environment is the interaction that occurs between individuals, groups and the context within which they operate (Clayton, 2007). The exploration of learning environments has its roots in the Lewinian formula, B = f (P, E). This formula identifies that behaviour (B) is considered to be a function of (f) the person (P) and the environment (E) (Dorman, 2002). Previous research has found links between learning environments and student achievement (Aldridge & Fraser, 2000) and learning environments and student engagement (Zepke, 2010). There have been other studies on the effectiveness of outcomes-focused and technology-rich learning environments in promoting student retention, achievement, attitudes and equity, as observed by Aldridge and Fraser (2008), Aldridge et al. (2004) and Trinidad et al. (2001). One of the findings of these studies is that the closer the match between the actual learning environment and the student's preferred learning environment, the more likely it is that the student's outcomes will be better (Aldridge et al., 2004; McLoughlin & Lee, 2008).

Another study commissioned by the International Association for the Evaluation of Educational Achievement (IEA), which took 10 years to complete, aimed to, among other things, identify those teaching behaviours within the classroom that were associated with greater student achievement (T. Anderson et al., 2013). In researching active learning classrooms, Baepler et al. (2016) noted that the focus on classroom environment research was less on the physical space (lighting, ventilation and aesthetic appeal) and the conduciveness of this for learning and teaching but more on the interaction between teacher and learners and the impact of each on the other to achieve desired outcomes. While there is a large body of research in the face-to-face learning environment and a relatively large body of knowledge in the wholly online learning environment, at the time this study commenced, there was a paucity of research in the area of the blended learning environment and the perceptions of student and teachers who were inhabiting this

environment. This study focuses on the interaction between teachers and students and its outcomes in the blended learning environment.

1.2.2 Blended Learning Environments

It is evident from the literature that the term 'blended learning' has multiple meanings depending on who is using it and in what context (C. Bonk & Graham, 2005; Chen & Jones, 2007; Garrison & Kanuka, 2004; Hrastinski, 2019; Lopez-Pérez et al., 2011; Osguthorpe & Graham, 2003). In the NZ context, Smythe (2011) noted that the term is 'ill-defined, inconsistently used and means different things to different people' (Smythe, 2011, p. 2). The lack of a definitive, clear and consistent use of the term may be the term's strength (Sharpe et al., 2006; H. Singh, 2003; Vignare, 2007). Sharpe et al., (2006) argued that this ambiguity is positive because it creates the space for teaching staff to negotiate their own meaning within the context of their institution, classroom learning environment, program, course or student group. The position this study takes is that while a working definition is necessary, further research and debate are required to develop definitions, models and conceptualisations of blended learning (Hrastinski, 2019).

This study addresses Hrastinski's (2019) recommendation for future research to respond to the questions: 'What do we mean by blended learning? What fits under the blended learning umbrella? What are we blending? How are we blending? Why are we blending?' (p. 568). The first uses of the phrase 'blended learning' were often associated with simply linking traditional or face-to-face classroom teaching (to e-learning activities, such as asynchronous work usually accessed by students outside the class at their own time and pace (H. Singh, 2003). W. Kim (2007) argued that there are at least three key dimensions to consider in classifying learning: physical class-based or virtual, formal or informal and scheduled or self-paced. Using these dimensions, he defines blended learning as 'a combination of two or more of all possible dimensions' (p.4) and qualifies this by stating that the physical class-based end of the first dimension is mandatory. Other definitions focus on optimising the outcomes of the blend or mix. For example, blended courses integrate online with face-to-face teaching in a planned, educationally valuable manner (Niemiec & Otte, 2006) and blended courses do not just combine but trade-off face-to-face time with online activity or vice versa (Niemiec & Otte, 2006).

While for some blended learning is simply using a variety of media and methods and a combination of online and face-to-face learning (Graham & Bonk, 2005), others such as W. Kim (2007); Graham (2006), and Garrison and Vaughan (2008), argue that this combination is subject to a range of permutations in technologies, pedagogies and contexts. Smythe (2011), Oliver and Trigwell (2005), and Sharpe et al. (2006), similar to W. Kim (2007), propose that there are a number of dimensions to blended learning that are found to be common within most tertiary educational institutions. Table 1.1, adapted from Oliver and Trigwell (2005) and Sharpe et al., (2006), outlines these core dimensions.

Table 1.1: Core Dimensions of Blended Learning

Dimension	Description
Method of delivery	The combination of face-to-face with web-based online approaches.
Technology	The combination of media and tools (technologies) employed.
Teaching and learning approach	The combination of a number of teaching and learning approaches, irrespective of the technologies used.
Chronology	Synchronous (real-time) and asynchronous approaches.

Source: Smythe (2011).

For the purpose of this study, blended learning is viewed as encompassing the four dimensions above and combining them in a variety of permutations with the intention of optimising learning outcomes or student achievement.

1.3 Research Aim and Research Question

This research aims to investigate students' perceptions of student–teacher interactions and their cultural backgrounds and impact on student achievement in a blended learning environment. The specific research questions which guided this study are:

The main research question is:

- How does student–teacher interaction and student engagement affect achievement in a blended learning environment?

The sub-questions are: In a blended learning environment:

1. How does student–teacher interaction affect student achievement?
2. How does student engagement affect student achievement?

3. How does student gender affect student–teacher interaction?
4. How does student gender affect student engagement?
5. How does cultural background affect student–teacher interaction?
6. How does cultural background affect student engagement?

These research sub-questions are addressed using qualitative and quantitative data-gathering methods in an explanatory mixed methods single case study approach. Quantitative data were gathered using Parts 1 to 4 of The Teacher Interaction and Student Engagement Questionnaire (TISEQ). The TISEQ combined the 48-item Australian version of the Questionnaire on Teacher Interaction (QTI; Fisher, Fraser et al., 1995) and the Student Engagement Questionnaire (SEQ; Coates, 2011). Part Five of the TISEQ consisted of open-ended questions that provided qualitative data. Student focus group interviews and selected teacher interviews provided further qualitative data to add clarity and triangulate data.

1.4 Limitations

In this section, the factors limiting this research are examined. The study employed a mixed methods single case study approach to explore student and teacher perceptions of the blended learning environment and to answer the research questions. There were 248 students in the sample, and the study was undertaken at a tertiary institute in Auckland, NZ. While the study has generated a large amount of data, several limitations are now presented.

The first limitation is the time it has taken to complete this study. This study was conceptualised in 2012–2013, and the data were gathered over a three-year period from 2015 to 2018. The final thesis was submitted in 2024. Much has changed since the study commenced and the significance of this research is less valuable to the institution than it would have been if the thesis was published sooner. Nonetheless, it still provides valuable data for any tertiary institution intending to pursue blended learning options.

The next limitation is the nature of case study research. Case study research allows the researcher to examine the characteristics of an individual unit to probe deeply and to analyse intensively the many phenomena within the unit. (Cohen & Manion, 1989). This study has limited generalisability in that the perceptions shared by the 248 students may

differ from other students in the population group comprising 5,501 full-time equivalent students. This study did not set out to establish generalisations; instead, it focused on probing deeply into the impact of the blended learning environment on achievement and engagement.

Another limitation was accessing learners to conduct focus groups from the original sample. In many cases, learners selected to be a part of the focus groups had completed their studies and left the institution, making it difficult to contact them. However, this was overcome by using convenience sampling to select participants for the focus groups.

Rapid advancements in educational technology and digital platforms have changed the blended learning landscape consequently the tools and platforms used in 2015–2018 might differ significantly from those used today. The data gathered in this study will most likely be different considering these technological advancements. Also, educational practices and policies have likely evolved since the data were collected, potentially affecting the relevance of the findings to current educational contexts. Finally, external factors such as economic conditions, political changes, and global events (e.g. the COVID-19 pandemic) that occurred during the study period might have influenced student and teacher perceptions and experiences of blended learning.

1.5 Significance

This study contributes to the growing field of research on blended learning environments by providing a greater understanding of the impact of this environment on learner and teacher interaction. The value of this interaction in any learning environment is significant in determining learner outcomes.

The data gathered in this study can be used by other tertiary education providers to guide policy on using technology to achieve better student outcomes based on student feedback on what works for them and what does not. If there are institutions that want to explore student perceptions of the blended learning environment, the survey instrument used in this study will be useful to them to gain an understanding of student views.

This study is also significant in that it contributes to the field of teaching and learning in the blended learning environment. Teacher feedback is one of the most important determinants of student achievement (Hattie, 2008). Hattie's (2008) study drew this

conclusion in the face-to-face environment. This thesis provides data to establish whether the same can be said for the blended learning environment. Also, it has been observed that there is a discrepancy in the quality of feedback teachers provide face-to-face and online (Bruce et al., 2012; Gonzales, 2009; Horspool & Lange, 2012). The perceptions of both teachers and students in this study will be instructive in providing direction for the type and quality of feedback teachers provide and the impact of this feedback on student achievement and engagement.

Course completion rates data provided by the Tertiary Education Commission indicate that many students drop out of programs of study and courses before completing. To be able to address this and enhance students' experience in tertiary study, it is important to understand how students are engaged in their studies and the role of teachers, the institution and other students in influencing students' educational success. Having data that cover the breadth of student experience, particularly students' interaction with their teachers and engagement with their institution and learning, advances our knowledge about learning processes and outcomes and provides measures that can be used to enhance students' experience and success.

This study delved into student gender and cultural background and its impact on student achievement and engagement. These findings are instructive in guiding teaching staff and institutions in meeting the needs of learners from diverse backgrounds. This study provides evidence about the perceptions of male and female students and students who identify themselves as belonging to different cultural groups, including Māori and Pasifika students. These findings can potentially inform teaching and learning strategies to improve educational outcomes for Māori and Pasifika students in particular and other students generally.

1.6 Overview of This Thesis

In this chapter, an introduction to the thesis has been provided. The conceptual origin of the thesis was described, along with background information about the study. The research aim and questions were stated, the limitations of the study were outlined, and the significance of the research was highlighted.

Chapter 2 presents a literature review to locate this study within the existing body of knowledge to illustrate the identified gaps and demonstrate the contribution of this study to the literature. It begins with a historical overview of learning environment research and the various tools developed to evaluate interactions in learning environments. Next, an overview of blended learning environments is presented, followed by a review of literature on the transformative potential of these environments. This is followed by a review of teacher–student interaction and interpersonal behaviour in relation to student achievement and student engagement. The chapter ends by reviewing cultural background studies concerning achievement and engagement.

Chapter 3 presents an overview of the methodology used in this study. It begins by providing justification for the methodological approach and describes the research design and participants in this study. Quantitative and qualitative data collection methods were described, followed by an explanation of the data analysis procedures. After that, the ethical concerns of this study are addressed.

Chapter 4 presents the findings of this study. Quantitative data analysis is followed by qualitative data analysis. Thereafter, the research questions that guided this study are answered. The fifth chapter presents the conclusions of this study with a discussion of the key findings. Chapter 6 provides recommendations, outlines the contributions of the research and concludes by suggesting directions for further research.

Chapter 2: Literature Review

2.1 Introduction

The previous chapter introduced this study, offered background information, presented the research questions, and offered an overview of the significance and limitations of the study. In this chapter, the literature relevant to this study is presented. Since the focus of this study is on blended learning environments, the literature review will examine two main strands: research on learning environments and research on blended learning. The review will focus on literature involving the key variables identified in the research questions, namely student–teacher interaction, achievement, engagement, gender, and cultural background (as outlined in the previous chapter).This chapter reviews the literature and practices along the following lines:

- historical overview of learning environment research and related theory
- assessment tools used in learning environment research
- definitions of blended learning in recent research
- the transformative potential of blended learning using two key frameworks, namely, Khan's Octagonal framework and the Community of Enquiry Framework (CoI)
- Student–teacher interaction research in general, the QTI, and its application to different learning environment studies
- suitability of the QTI to this study in relation to other studies in higher education settings
- Student engagement in higher education, generally and in NZ in particular and the efficacy of the SEQ used in this study
- gender and cultural background issues in relation to students' engagement and achievement in educational settings.

The chapter concludes with a summary of the literature reviewed.

The next section provides a historical overview of learning environment research.

2.2 Learning Environment Research Historical Overview

One of the aims of educational institutions is to improve outcomes for learners. Consequently, educational programs and courses of study are designed and put in place to ensure that learning outcomes are achieved. Because the learning environment in which educational programs are delivered affects student learning, this environment has been a central focus of research for many decades. From a review of research in the field of learning environments (C.S. Anderson, 1982; B. J. Fraser, 1981, 1998a, 2002, 2012; Templeton & Johnson, 1998; Wubbles et al., 1992; Zandfliet & Fraser, 2018), it is evident that several aspects of the learning environment have been the subject of international research in primary, secondary and tertiary educational settings. What follows is a discussion of the theory and conceptualisation of learning environment research, the different assessment tools used to evaluate interactions in learning environments and a closer examination of tertiary blended learning environments—the key focus of this study.

2.2.1 Theory and Conceptualisation of Learning Environment Research

Fraser (2019a) noted that the birth of the field of learning environments is often attributed to the research of Herbert Walberg, who developed the Learning Environment Inventory (LEI) and Rudolf Moos, who worked on an extensive research program on nine different human environments to culminate in the development of the Classroom Environment Scale (CES). Prior to this, Lewin's (1936) field theory in business settings influenced learning environment research. The exploration of learning environments has its roots in the Lewinian formula $B = f(P, E)$. This formula identifies that behaviour (B) is considered to be a function of (*f*) the person (P) and the environment (E) (Dorman, 2002). This model was modified and expanded by Walberg (1976) to become $L = f(I, A, E)$, with learning being a function of instructional (I), attitudinal (A) and environmental characteristics (E) (B. J. Fraser, 2019a). Fraser (2019a) further acknowledged that Moos and Trickett's (1974) scheme of classifying all human environments (including education) into three basic types of dimensions has had an enduring impact. The three dimensions are *relationship,* which focuses on the type and quality of personal relationships within the environment; *personal development dimensions,* which assess basic trends along which personal models and self-improvement occur; and *system maintenance and system change dimensions,* which involve the extent to which the environment is structured with

set expectations, the maintaining of control and being responsive to change. This study uses the Teacher Interaction and Student Engagement Questionnaire (TISEQ), which is based on Moos' three general dimensions: teacher–student interaction (relationships dimension), engagement (personal development dimension) and qualitative data, which assess student perceptions of the changes from their face-to-face environment to the blended learning environment (system maintenance and system change dimensions).

In developing the LEI, Walberg (1976) proposed that participants, such as teachers and students, are capable of successfully expressing their perceptions on various aspects of the learning environment. The work of Moos (1974) and Walberg (1976) catalysed the development of various learning environment instruments. In the next section, the learning environment assessment tools pertinent to this study are discussed.

2.2.2 Assessment Tools Used to Evaluate Interactions in Learning Environments

A historical examination of the field of learning environment research shows that a striking feature is the availability of a variety of economical, valid and widely applicable questionnaires that have been developed and used for assessing students' perceptions of the classroom environment. Few fields in education can boast the existence of such a rich variety of validated and robust instruments used in many research applications (Fraser, 1988). Recent studies continue to underscore the importance of these tools in modern educational research (Aldridge & Fraser, 2018; Dorman et al., 2021).

The instruments used to evaluate interactions in learning environments, while measuring different variables, have designs similar to the design of the Learning environment Inventory (LEI). Each instrument has a range of items clustered around scales aligned to Moos' scheme (Chandra, 2004). Both the LEI and the Classroom Environment Scale (CES) have served as bases for, or have had scales used in, or have catalysed in some way several subsequent specialised learning environment research instruments (Steele, 2013). Recent updates to these instruments ensure their relevance in contemporary educational contexts (Fraser, 2019b; Aldridge & Fraser, 2018). The relevant learning environment instruments are described below.

2.2.2.1 The Learning Environment Inventory

Fraser and Walberg (1981a) suggested that at the time, 'the most widely used perceptual measure of psychosocial environment in science education' (p. 68) was the LEI (Anderson & Walberg, 1968, as cited in Rickards, 1998). This instrument, which was developed in the 1960s, measured all three dimensions of Moos' scheme; it measured student perceptions of 15 environment dimensions of secondary school classrooms (B. J. Fraser & Walberg, 1991). The LEI contains 105 statements with which students can agree or disagree on a four-point scale (1 = *strongly agree*, 2 = *agree*, 3 = *disagree* and 4 = *strongly disagree*). The 105 items are used to measure the classroom climate according to 15 different scales (seven items per dimension; Fraser, 2019b).

2.2.2.2 Classroom Environment Scale

Moos originally developed the CES during his work in the development of social climate scales (Fraser, 1989). It was inspired by research in a number of work environments, including psychiatric hospital wards, school classrooms, prisons, university residences and business workplace environments (Rickards, 1998). The CES contains nine scales with 10 true or false items per scale for use in secondary school classrooms. The CES was mainly developed to examine school classrooms from the perspective of teacher–student interactions and student–student interactions (Moos & Trickett, 1974). The instrument also has 'actual' and 'preferred' forms, which allow students to describe their current (actual) classroom and their optimum (preferred) classroom (Moos & Trickett, 1974).

2.2.2.3 The My Class Inventory

Fisher and Fraser (1981) developed a simplified version of the LEI, the My Class Inventory (MCI), for use with primary school students (Fraser, 2019b). It has 38 items instead of the 105 items in the LEI and has five scales instead of the 15 in the LEI. Further, items were modified to enable easier readability, and the MCI has a simpler response format of 'yes' or 'no', scored directly on the questionnaire. Fraser and O'Brien (1985) simplified the MCI to a 25-item short form. Fraser (2019b) noted that owing to its unusually low reading level, researchers have continued to use the MCI over the following decades (Goh & Fraser, 1998; Majeed et al., 2002; Scott Houston et al., 2008; Sink & Spencer, 2005).

2.2.2.4 The College and University Classroom Environment Inventory

While the LEI and the CES were developed for use in secondary school classrooms, the College and University Classroom Environment Inventory (CUCEI; Treagust & Fraser, 1986) was developed for use in tertiary education settings. The initial development of the CUCEI was guided by four criteria (Treagust & Fraser, 1986): consistency with secondary school instruments through the examination of existing instruments for the secondary school level, the association of scales to Moos' three general dimensions, the selection of meaningful items that were relevant and understood by tertiary teachers and students, and the economy of response time and data processing (Fraser & Treagust et al., 1987). The CUCEI has seven scales (Personalisation, Involvement, Student Cohesiveness, Satisfaction, Task Orientation, Innovation and Individualisation), each with seven items scored on a four-point scale (Treagust & Fraser, 1986).

2.2.2.5 What is Happening in This Classroom Instrument

The What is Happening in This Classroom (WIHIC; Fraser et al., 1996) instrument combines scales from a range of existing questionnaires and introduces two new scales: Equity and Constructivism (P.J. Kelly, 2010). Several adaptations have been made from the original Australian version, and the instrument has been used worldwide (Canada, United States of America, Singapore, Indonesia, India, Greece, Brunei and Korea). The instrument has both 'class' and 'personal' forms. The class form examines student perceptions of the class as a whole group, and the personal form assesses the student's perceptions of their role in the classroom. The reduction of the WIHIC from the original 90-item, nine-scale version was conducted using interviews and statistical analysis. In the final version, 56 items remained in seven scales (Rickards, 1998). The WIHIC is a seven-scale instrument with eight items in each scale: Student Cohesiveness, Teacher Support, Involvement, Investigation, Task Orientation, Cooperation and Equity. The WIHIC's responses are scored on a 5-point Likert scale (1 = *almost never*, 2 = *seldom*, 3 = *sometimes*, 4 = *often* and 5 = *very often*) with no reverse-scored items. Recent studies have validated the continued relevance of WIHIC in diverse educational settings (Aldridge et al., 2019).

2.2.2.6 Distance and Open Learning Environment Survey

The Distance and Open Learning Environment Survey (DOLES; O. Jegede et al., 1998) is a distinctive instrument developed to address the growing need for research into university distance education settings, particularly in science (O.J. Jegede, 1992). The initial version of DOLES comprised 60 items, which were refined to 52 items in the final version. These items are organized into five core scales and two optional scales, each containing a varying number of items. The optional scales are designed for specific purposes or for use by students to whom these aspects are relevant, making DOLES unique in this regard. Responses are scored on a five-point Likert-type scale.

The development criteria for DOLES included consistency with existing literature on learning environments, alignment with previously constructed instruments for face-to-face learning environments, coverage of distance and open learning characteristics, efficiency in administration time and scoring, and relevance to teachers and students in the target distance and open education audience (O. Jegede et al., 1998 cited in Steele, 2013).

Distance and Open Learning Environment Survey (DOLES; O. Jegede et al., 1998) is a unique instrument developed from a growing need for research into university distance education settings, particularly in science (O.J. Jegede, 1992). The initial version of the DOLES had 60 items. These were reduced in the final version to 52 items arranged into five core scales and two optional scales containing varying numbers of items. The optional scales are designed to be used for specific purposes or by students for whom these aspects are relevant. The DOLES is a unique instrument from this perspective. Responses are scored on a five-point Likert-type scale (Steele, 2013).

The criteria used in the development of the DOLES were consistency with existing literature on learning environments, consistency with previously constructed instruments for face-to-face learning environments, coverage of distance and open learning characteristics, efficiency of administration time and scoring responses and finally, salience to teachers and students in the target distance and open education audience (O. Jegede et al., 1998).

2.2.2.7 The Web-Based Learning Environment Inventory

The Web-Based Learning Environment Inventory (WebLEI) was developed to address the distinctive characteristics of web-based learning environments, which have become prevalent in many tertiary institutions (V. Chang & Fisher, 2003). The instrument comprises four main scales designed to measure student perceptions of these environments: Emancipatory Activities (such as online access and student autonomy), Co-Participatory Activities (including flexibility, collaboration, and reflection), Qualia (such as enjoyment, success, and frustration), and Information Structure and Design Activities. Notably, the first three scales were adapted from Tobin's (1998) work on Connecting Communities Learning. The complete WebLEI consists of 37 Likert-type items distributed across the four scales (Steele, 2013).

The WebLEI was validated with a sample of 334 undergraduate and graduate students, yielding Cronbach's alpha coefficients ranging from .65 to .88 (V. Chang & Fisher, 2003). The study concluded that the WebLEI is a valid and reliable instrument for measuring student perceptions of web-based learning environments. Recent research has further confirmed the WebLEI's effectiveness in evaluating modern web-based educational settings (Dorman et al., 2021).

The Web-Based Learning Environment Inventory (WebLEI) was developed as a response to the unique nature of web-based learning environments that have become commonplace in many tertiary institutions (V. Chang & Fisher, 2003). The instrument consists of four main scales that aim to measure student perceptions of web-based learning environments: Emancipatory Activities (such as online access and student autonomy), Co-Participatory Activities (for example, flexibility, collaboration and reflection), Qualia (such as enjoyment, success and frustration) and Information Structure and Design Activities. Interestingly, the first three scales were adapted from previous work by Tobin (1998) on Connecting Communities Learning. The complete instrument consists of 37 Likert-type items spread across the four scales. The WebLEI instrument was validated with a research sample of 334 undergraduate and graduate students, the results of which produced Cronbach's alpha coefficients ranging from .65 to .88 (V. Chang & Fisher, 2003). Ultimately, the study found the WebLEI to be a valid and reliable instrument for measuring student perceptions of web-based learningenvironments. Recent research has

confirmed the WebLEI's utility in evaluating modern web-based educational environments (Dorman et al., 2021).

2.2.2.8 Distance Education Learning Environment Survey

The Distance Education Learning Environment Survey (DELES) was developed by Walker and Fraser (2005) to specifically measure post-secondary distance education learning environments. The instrument consists of 34 items distributed across six scales: Instructor Support, Student Interaction and Collaboration, Personal Relevance, Authentic Learning, Active Learning, and Student Autonomy. It was validated in a study with a sample of 680 post-secondary students enrolled in distance education classes, demonstrating both validity and reliability, with Cronbach's alpha coefficients ranging from .75 to .95 for the six scales. The study highlighted that Student Interaction and Collaboration are significant factors in high-quality distance education.

Additionally, the instrument included a seventh scale focused on student attitudes toward the subject. This independent scale, consisting of eight items, was derived from the Test of Science Related Attitudes (TOSRA) and exhibited a Cronbach's alpha reliability coefficient of .95. The study concluded that the DELES instrument is effective for assessing student perceptions of distance education learning environments. Recent research continues to affirm the utility of DELES in various educational contexts (Aldridge & Fraser, 2018).

2.2.2.9 Perceptions of Learning Environment Questionnaire

The Perceptions of Learning Environment Questionnaire (PLEQ) was designed by J. Clarke (1995) to gather data on student perceptions in a tertiary learning environment. Unlike the other instruments discussed in this chapter, the PLEQ uses a semi-structured and open-ended format instead of a forced-choice format. It was intended to capture students' feelings about the activities and behaviours they experience in different tertiary learning environments and the reasons behind these feelings (J. Clarke, 1995). The PLEQ was developed to overcome some limitations of existing quantitative instruments (Steele, 2013).

In J. Clarke's (1995) study, the PLEQ was used to collect data from 1,249 tertiary students at the Queensland University of Technology. One significant finding was that

approximately 40% of student comments related to poor teaching. The study concluded that university lecturers must improve their teaching practices through professional development and by reviewing student feedback (Steele, 2013). More recent adaptations and studies have continued to emphasize the PLEQ's value in capturing nuanced student feedback (D. Clarke, 2020). This study holds two key points of value for this thesis: the use of semi-structured, open-ended questions and the conclusion that improved teaching practices are necessary to enhance student outcomes and achievement.

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In J. Clarke's (1995) study, the PLEQ instrument was used to collect data on tertiary students' perceptions of the learning environments. The study comprised a research sample of 1,249 tertiary students from the Queensland University of Technology. One of the significant findings of this study was that approximately 40% of the comments made by students related to poor teaching. The study concluded that university lecturers have a responsibility to improve their teaching practice through professional development and the review of student feedback on teaching. More recent adaptations and studies have continued to underscore the PLEQ's value in capturing nuanced student feedback (D. Clarke, 2020). This study holds two points of value for this thesis: the use of semi-structured open-ended questions and the conclusion that improved teaching practice is required to improve student outcomes and achievement.

2.2.2.10 Science Laboratory Environment Inventory (SPAQ)

The Science Laboratory Environment Inventory (SPAQ), (Aldridge & Fraser, 2008) was designed to assess students' perceptions of the learning environment in science laboratories. It measures various dimensions of the laboratory environment that can

influence students' learning and attitudes towards science. The SPAQ includes scales such as:

Student Cohesiveness - Measures the extent to which students know, help, and are supportive of one another.

Open-Endedness - Assesses the extent to which the laboratory activities allow for an open-ended, inquiry-based approach.

Integration - Evaluates the extent to which laboratory activities are integrated with the theory taught in class.

Rule Clarity - Measures how clearly rules and procedures are communicated and understood by students.

Material Environment - Assesses the adequacy and accessibility of laboratory materials and equipment.

The SPAQ uses a Likert-type scale for responses, allowing students to express their level of agreement with various statements about their laboratory environment.

Aldridge and Fraser (2008) conducted a study in Indonesian classrooms and validated the SPAQ, reinforcing its use in diverse educational settings. The findings supported the instrument's reliability in assessing student perceptions of the science laboratory environment and its impact on learning outcomes.

Chionh and Fraser (2009) used the SPAQ in Singapore and focussed their study on geography and mathematics, to explore the correlation between the laboratory environment and student outcomes, reaffirming the instrument's robustness and applicability in various educational contexts beyond science alone.

This instrument was also used by Wahyudi and Treagust (2014) in Indonesian lower secondary schools. This study validated the use of SPAQ in Indonesian lower secondary schools, confirming its reliability and validity in measuring students' perceptions of their science laboratory environments. The research highlighted the instrument's effectiveness in identifying areas needing improvement in laboratory settings.

These studies collectively demonstrate the SPAQ's efficacy as a tool for evaluating and improving the quality of science laboratory environments across different educational contexts.

2.2.2.11Constructivist Learning Environment Survey (CLES)

The Constructivist Learning Environment Survey (CLES) (Taylor et al., 1997) is an instrument designed to evaluate students' perceptions of the constructivist qualities of their classroom environments. Developed by Taylor et al., (1997), the CLES aimed to capture the extent to which classroom environments supported constructivist principles, which emphasizing student-centred learning, active engagement, and the construction of knowledge through experience and interaction.

The CLES included several key dimensions:

Personal Relevance - Assesses the degree to which learning activities are connected to students' lives outside of school and their real-world experiences.

Uncertainty - Measures the extent to which students are exposed to the tentative nature of scientific knowledge and the existence of multiple perspectives.

Critical Voice - Evaluates whether students feel safe to express concerns and critique the teaching methods and content without fear of negative consequences.

Shared Control - Examines the degree to which students share control with the teacher regarding the management of classroom activities and decision-making processes.

Student Negotiation - Looks at the extent to which students are encouraged to interact, discuss, and negotiate with their peers to develop a shared understanding of concepts.

B. Johnson and McClure (2004) used a revised and shortened version of the CLES and validated its use in various educational contexts. Their research confirmed the reliability and validity of the CLES in measuring constructivist aspects of the classroom environment and its impact on student learning experiences (Johnson & McClure, 2004).

W.K. Adams et al., (2006) conducted a study in Colorado focussed on physics education and validated the principles behind the CLES by illustrating the importance of constructivist learning environments in improving student attitudes and understanding of

physics. The findings support the CLES's relevance and efficacy in assessing constructivist elements in educational settings.

Aldridge et al., (2012) conducted a study which used the CLES to facilitate teacher reflection and action research, validating the instrument's effectiveness in promoting reflective practices among educators. The findings highlighted the CLES's role in helping teachers create more constructivist learning environments.

These studies demonstrate the CLES's validity and adaptability in various educational contexts, confirming its utility in assessing and enhancing constructivist learning environments.

2.2.3 Learning Environment Summary

This section presented an overview of learning environment research, illustrating how the field has developed and matured over time into a well-established field of research. The origins of the field and the three dimensions of relationship, personal development dimensions and system maintenance and system change dimensions were discussed in relation to the significance of these dimensions to this study. Thereafter, the key assessment tools used to evaluate interactions in learning environments relevant to this study were presented. There was no specific available tool used to assess blended learning environments at the time of this study. In the next section, the blended learning environment is discussed with particular emphasis on blended learning environments within tertiary institutions.

2.3 Blended Learning

The history of blended learning dates back to the 1840s when Sir Isaac Pitman presented the first distance education course. In the 1960s and 1970s, employers delivered training to several employees using computers (Singh, Steele & Singh, 2021). At the time this was groundbreaking in that it was the first time that employees completed training without attending face to face live sessions (Pappas, 2015).

Fig.2.1: Timeline of Blended Learning (Pappas, 2015 cited in Singh et al., 2022)

In the past two to three decades, online learning, including blended learning, has undergone significant transformation. In the late 1990s, as internet-based instruction emerged, personal computers became more accessible to households and businesses, paving the way for online education. Organisations began uploading learning materials onto web-based platforms, making education available globally, even to remote and rural areas. This shift prompted developers to adapt online content, such as large video files, to meet learners' evolving needs (Pappas, 2015).

As the digital age progressed, blended or hybrid learning became more prevalent. This instructional approach combines various teaching methods, transforming learning into a more engaging and interactive experience. With advances in technology, students gained access to vast resources like webinars and tutorials, while instructors could offer more flexible and adaptable training opportunities to accommodate changing schedules (Pappas, 2015).

2.3.1 Defining Blended Learning

It is evident from the literature that the term 'blended learning' has multiple meanings depending on who is using it and in what context. (C.J. Bonk et al., 2006; Chen & Jones, 2007; López-Pérez et al., 2011; Osguthorpe & Graham, 2003). In the NZ context, Smythe (2011) noted that the term is 'ill-defined, inconsistently used and means different things to different people' (p. 2). The lack of a definitive, clear and consistent use of the term may be the term's strength (Sharpe et al., 2006; H. Singh, 2003; Vignare, 2007) in that it creates the space for teaching staff to negotiate their own meaning for it within the context of their own institution, classroom learning environment, program, course or student group (Sharpe et al., 2006). This transformative potential of blended learning is of interest in this study.

Reviewing the literature on blended learning established the difficulty that others have had in reaching a consensual definition of the term. The term 'blended learning' first appeared in the literature around 1999 (Driscoll, 2003). The first uses of the term were often associated with simply linking traditional or face-to-face classroom teaching to e-learning activities, such as asynchronous work usually accessed by students outside the class at their own time and pace (H. Singh, 2003). At its simplest, blended learning is viewed as the purposeful integration of classroom face-to-face learning experiences with online learning experiences (Garrison & Kanuka, 2004). W. Kim (2007) argued that there are at least three key dimensions to consider in classifying learning: physical class-based or virtual, formal or informal, and scheduled or self-paced. Using these dimensions, he defined blended learning as 'a combination of two or more of all possible dimensions' and qualified this by stating that the physical class-based end of the first dimension is mandatory (W. Kim, 2007, p.2). Other definitions focus on the optimisation of the outcomes of the blend or mix. For example, 'Blended courses integrate online with face-to-face instruction in a planned, pedagogically valuable manner' and blended courses do not just combine but trade-off face-to-face time with online activity or vice versa (Niemiec & Otte, 2006, p.7). To clarify blended learning further, Driscoll (2002, p.1) identified four eclectic definitions as follows:

1. To combine or mix modes of web-based technology (e.g., live virtual classroom, self-paced instruction, collaborative learning, streaming video, audio, and text) to achieve an educational goal.

2. To combine various pedagogical approaches (e.g., constructivism, behaviourism, cognitivism) to produce an optimal learning outcome with or without instructional technology.
3. To combine any form of instructional technology (e.g., videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training.
4. To mix or combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working. Blended learning has been used to describe the mixing of delivery methods to students (distance and face-to-face, face-to-face and independent learning) as well as the combination of face-to-face teaching with various types of non-classroom technology-mediated delivery (e.g., instructional television). In its current form, blended learning is most commonly associated with the combination of face-to-face and fully online components of a course (Young, 2002; Rooney, 2003 & Nsofor et al., 2014). Also, the term has been used to describe the combination of media and tools employed in an e-learning environment, as well as the combination of a number of pedagogic approaches within one course design, irrespective of learning technology used. (p. 1)

Graham (2006) noted that there are three categories of blended learning systems based on the primary objective of the blend:

- **Enabling blends**: addressing issues of access and convenience—providing the same opportunity or learning experience but through a different mode where learners choose the option that meets their cost and time constraints.
- **Enhancing blends**: allowing incremental changes to the pedagogy but do not radically change the way teaching and learning occurs for example where; blending is enhanced by adopting learning management systems to provide supplementary resources for courses that are mainly conducted face-to-face.
- **Transforming blends**: where, blending allow a radical transformation of the pedagogy—for example, a change from a model where learners are just passive recipients of information to a model where learners actively construct knowledge through dynamic interactions. These types of blends enable intellectual activity that was not practically possible without the technology and is done by utilising technology-mediated approaches in teaching as a main instruction method combined with traditional learning.

The above transforming blends that Graham (2006) noted are of most interest to this study and are discussed later in this chapter while considering models of blended learning.

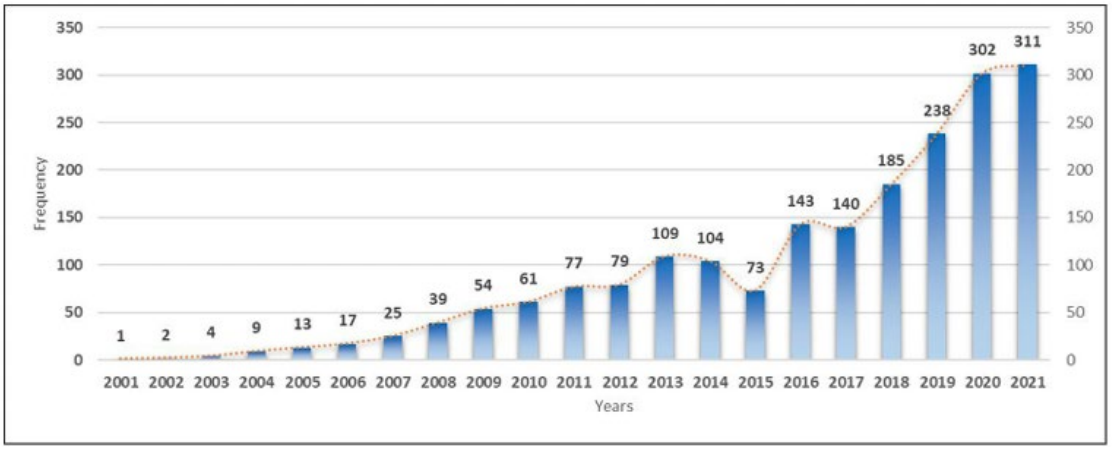
While for some blended learning is simply using a variety of media and methods or a combination of online and face-to-face learning (Graham & Bonk, 2005), others like W. Kim (2007), Graham (2006) and Garrison and Vaughan (2008) argued that this combination is subject to a range of permutations in technologies, pedagogies and contexts. Smythe (2011), Oliver and Trigwell (2005) and Sharpe et al. (2006), similar to W. Kim (2007), propose that there are a number of dimensions to blended learning that are found to be common within most tertiary educational institutions. Table 1.1, adapted from Oliver and Trigwell (2005) and Sharpe et al., (2006), outlines these core dimensions.

For the purpose of this study, blended learning is viewed as encompassing the four dimensions above and combining them in a variety of permutations with the intention of optimising learning outcomes or student achievement. While this is the case, a historical overview from 2001 to 2021 of publications shows a vast increase since Smythe's (2011) study (Bozkurt, 2022). Consequently, definitions since 2011 will be presented in the next section.

2.3.2 Revisiting the Definition of Blended Learning post-pandemic

Bozkurt (2022) conducted a time trend analysis of blended learning publications and presented the data shown in Figure 1. According to Bozkurt (2022) the most cited references were from studies conducted in 2004 and 2008 (see Garrison & Kanuka, 2004; Rovai & Jordan, 2004; Graham, 2006; Garrison & Vaughan, 2008 and So & Brush, 2008). These publications were concerned with issues of interest to this study like, the transformative potential of blended learning in higher education, sense of community, collaborative learning, social presence, and satisfaction (Bozkurt, 2022).

Figure 2.2:Time trend of the publications on blended learning (Bozkurt, 2022)



Bozkurt (2022) noted that the frequency of blended learning publications remained relatively stable until 2019, with only a minor decrease seen in 2015. A marked increase started in 2019, and the interest in blended learning peaked by 2020 and 2021. This peak coincided with the Coronavirus (Covid19) pandemic, when there was increased interest in the flexibility offered by blended learning (Bozkurt & Sharma, 2021), where teachers combined the best features of face-to-face and online learning (J. Singh et al., 2021) to shift to the new normal of social distancing (Bozkurt & Sharma, 2020) and to manage the implementation of remote teaching through educational technologies as necessary solutions (Jandrić et al., 2021).

In keeping with definitions of blended learning discussed in the section 2.3.1, Graham (2006), defined it as "instruction based on the combination of two historically separate models of teaching and learning: traditional face-to-face learning systems and distributed learning systems" (p. 5). Advancing Graham's (2006) definition, Bozkurt and Sharma (2021) highlight the flexible features of blended learning, stating, "blended learning refers to combining onsite and online learning by blending the strengths of one modality and neutralizing the weaknesses of the other to provide flexibility to learners, instructors, and educational institutions. The flexibility can be afforded to time, space, path, and pace through sequential or parallel designs" (p. 3). This flexible nature has appealed to many stakeholders in the educational landscape, especially in the post-pandemic world, as a way to mitigate disruptions and ensure continuity in education (Bozkurt, 2022; Bozkurt & Sharma, 2020; Pelletier et al., 2021). Although blended learning was gaining momentum to deliver programmes at higher education institutions like the one in this

study, before the pandemic (Dziuban et al., 2018), the pandemic accelerated its adoption (Bozkurt, 2022).

2.3.3 Global education changes and studies on Blended Learning from 2020 to 2024

In early March 2020, the World Health Organization officially declared COVID-19 a pandemic, prompting extraordinary security measures, strict health protocols, and widespread social isolation (Ossiannilsson, 2022). Nearly every aspect of daily life was impacted, with education undergoing widespread changes. As schools and universities worldwide closed their doors to restrict the virus's spread, the traditional foundations of learning were disrupted, challenging the core structures of educational systems globally.

2.3.3.1 Blended Learning after the Covid-19 Pandemic

The global pandemic while creating challenges for tertiary educational institutions, also afforded opportunities for these institutions to pivot to online learning at pace. In some countries, circa 97% of institutions of higher learning have adopted online learning (Dikti, 2020), indicating widespread adoption of this approach to teaching and learning. Since the conclusion of the pandemic blended learning is now a part of the “new normal”. Consequently, higher education institutions have a pressing need to redesign learning methodologies to align with the current circumstances (Angwaomaodoko, 2024). As noted earlier, blended learning combines synchronous and asynchronous learning affording flexibility to deliver programs and courses based on learner needs. It has the potential to enhance learning outcomes. Interestingly the pandemic has forced institutions to adopt online learning out of necessity. What is required now is to reflect on the transition from face-to-face delivery to online delivery and create a reconfigured blended learning environment that is flexible, effective, and enhances learning outcomes. The experiences of students and teachers during the pandemic provide rich data to advance blended learning frameworks. In the following section research on blended learning conducted post-pandemic will be analysed.

2.3.3.2 Blended Learning Models and Thematic Analysis

According to Singh et al. (2021), integrated and distributed blended learning models have gained prominence in recent years. These models represent a more holistic approach to combining face-to-face learning with digital tools, integrating AI-based educational systems to offer customized learning paths. Their study focused on three main themes: the effectiveness of collaboration in blended environments, the role of artificial intelligence in enhancing learning experiences, and the necessity of hybrid models during the COVID-19 pandemic. Singh et al. (2021) argue that AI-based technologies can significantly increase learning efficiency by automating routine tasks for instructors, allowing them to focus more on interactive and high-impact learning activities. Additionally, the pandemic underscored the necessity of digital tools to maintain educational continuity, showing that hybrid models are not just temporary solutions but critical components of future educational systems. This study concluded that blended learning models should evolve to include more adaptive and AI-driven components, which will cater to diverse student needs and learning styles in higher education (Singh et al., 2021). Their study argues in line with this thesis, that a considered, planned strategy of blended learning is necessary to cater for diverse student needs and learning styles.

2.3.3.3 Adoption and Implementation of Blended Learning

Jones and Lee (2020) conducted a comprehensive review of various theoretical frameworks used to study the adoption and implementation of blended learning in higher education. Their study highlights the need for institutional readiness and support for successful blended learning initiatives. They identified three key factors for successful adoption, namely institutional commitment to digital transformation; the need for comprehensive faculty training, and robust technological infrastructure. Jones and Lee (2020) argue that many institutions struggled to implement blended learning effectively during the pandemic due to a lack of preparedness, both in terms of technology and faculty expertise. However, they also highlight success stories where institutions that had invested in blended learning prior to the pandemic were able to pivot quickly and maintain high-quality educational delivery. Their study provides a detailed analysis of the barriers and teacher competencies required to adopt blended learning. A roadmap is also offered for institutions seeking to improve their blended learning offerings. It concludes that a long-term strategy for technology integration, combined with continuous professional

development for educators, is essential for the successful implementation of blended learning in higher education (Jones & Lee, 2020). While their focus is on institutions and teacher competencies and not on students *per se*, their study is instructive in that the barriers they unpack are similar to the barriers in the institution in this thesis such as shortcomings in technology infrastructure and variable teacher competence in the online learning environment.

2.3.3.4 Diversifying Blended Learning Models

Kim et al. (2022) explored the diversity of blended learning models in higher education, emphasising that there is no single best model for all institutions. Instead, they present the case that blended learning should be tailored to meet the specific needs of students and teachers, as well as the institutional context. The study outlines several typically common models, including the flipped classroom, flex model, and enriched virtual model, each offering specific affordances relative to learning outcomes desired. For example, Kim et al. (2022) highlight the flipped classroom model as particularly effective in promoting active learning and student engagement. In this model, students are introduced to new content online and use face-to-face class time for discussions, problem-solving, and practical applications. Their study also underscores the importance of flexibility in blended learning, allowing students to progress at their own pace while still benefiting from real-time interactions with teachers and their peers. Kim et al. (2022) recommend that institutions conduct thorough needs assessments before selecting or designing a blended learning model, ensuring that it aligns with the specific goals of the curriculum and students' learning preferences. This approach, they argue, will lead to higher levels of engagement and better learning outcomes (Kim et al., 2022). This thesis will consider their recommendations after analysing the quantitative data from the TISEQ and the qualitative data from the open-ended questions of the TISEQ and the focus group interviews.

2.3.3.5 Challenges of Self-Regulated Learning in Blended Environments

Rodriguez (2024) focused on the growing need for self-regulation in students participating in blended learning environments. The study points out that while blended learning offers greater flexibility, it also requires students to take more responsibility for their learning. Self regulation is identified as a critical skill in blended learning contexts,

encompassing time management, self-motivation, and the ability to stay focused in online learning environments. The study found that many students struggle with these aspects, particularly when learning online, as distractions from social media and other non-academic content can be significant. To address this, Rodriguez (2024) suggests that blended learning offerings, incorporate specific interventions aimed at improving students' self-regulation skills. These could include time management workshops, self-assessment tools, and online well-being interventions that teach students how to minimize distractions while studying online. The study notes that fostering self-regulation is not just beneficial for academic success in blended learning, but also for students' overall personal development, making it a key area for educators to focus on in the design of blended learning environments (Rodriguez, 2024). The relevance of these recommendations to this thesis will be considered in the light of the perceptions students share in their responses to the open-ended questions of the TISEQ and the focus group interviews.

2.3.3.6 Digitally Enhanced Blended Learning

Parker and Smith (2024) explored how digital technologies can be leveraged to enhance blended learning in higher education. Their study highlights the growing importance of digital infrastructures and the need for institutions to invest in high-quality learning management systems (LMS) that support both synchronous and asynchronous learning. They argue that the pandemic demonstrated the importance of having a robust digital ecosystem that can support various learning modalities, from fully online courses to hybrid and blended models. Parker and Smith (2024) also highlight the need for equitable access to technology, pointing out that disparities in students' access to high-speed internet and digital devices can exacerbate educational inequalities. The study calls for institutions to prioritize digital inclusion, offering resources such as loaned devices, campus-wide Wi-Fi, and digital literacy training for both students and teaching staff. Additionally, the authors stress the importance of ongoing teacher development in online pedagogy, suggesting that institutions need to create continuous professional development programmes to help teachers stay up to date with the latest educational technologies and teaching strategies. They conclude that by fully integrating digital tools into the curriculum, institutions can create more engaging and accessible learning

experiences for all students (Parker & Smith, 2024). Their study offers valuable insights, and these will be considered in light of the findings of this thesis.

2.3.3.7 Rethinking Curriculum and Learning Design

Carter and Brown (2023) examined how blended learning has prompted a rethinking of curriculum and learning design in higher education. Their study argues that traditional curriculum structures are often ill-suited to the demands of blended learning, which requires more flexible, modular designs that can accommodate both online and face-to-face learning activities. Carter and Brown (2023) suggest that institutions need to adopt a learner-centered approach to curriculum design, which focuses on creating engaging, interactive learning experiences that can be delivered across multiple platforms. The study provides several examples of how institutions have successfully redesigned their curricula to support blended learning, including the use of digital tools to facilitate collaborative learning, peer assessments, and real-time feedback. They also highlight the importance of workload modeling, to ensure that both students and teaching staff can manage the demands of blended learning environments. Carter and Brown (2023) conclude that the future of higher education lies in flexible, technology-enhanced curricula that can adapt to the changing needs of students and the evolving educational landscape. This requires a concerted effort from teaching staff, administrators, and policymakers to rethink how courses are structured and delivered in the digital age (Carter & Brown, 2023).

Essentially, the affordances of blended learning were recognised even before the pandemic due to the technological solutions and increased capacity it offered for facilitating education (Pelletier et al., 2021). This was the case for the institution in this study, however, while the physical technology infrastructure for online learning was available this researcher argued that it needed to be used in a way that addressed students' learning needs to get better achievement outcomes and engage students better in the learning process. One of the ways that this could be addressed was to explore the transformative potential of blended learning, which is the focus of the next section.

2.3.4 The Transformative Potential of Blended Learning

When this study commenced, online learning had a pervasive influence on educational institutions, forcing academic teaching staff to re-examine their assumptions of teaching and learning. While the internet and information and communication technologies were transforming much of society, it was becoming more evident that these would become the defining transformative innovations for higher education (Garrison & Kanuka, 2004). Tertiary institutions like the one in this case study were expected to cater to a larger and more diverse cross-section of the population, particularly Māori and Pasifika, to allow for greater engagement with education to facilitate lifelong learning and to include technology-based practices in learning programs that reflect real-life experiences. A source of this transformation stems from online learners being able to be both together and apart and connected to a group of learners anytime and anywhere, without being time-, place-, or situation-bound (Garrison & Kanuka, 2004). The internet and e-learning technologies increase the quality of learning experiences, remove situational barriers and are more cost-effective (Daniel, 2000; Nsofor et al., 2014; Short et al., 2021; Young, 2002). Consequently, one of the affordances of technological advancement in education was the ability of learners to be recast in the role of socially active and collaborative individuals so that they are engaged in sense-making through internal reflection and external dialogue in formal and informal learning activities (Rooney, 2003). Cross (2006) aptly captures this affordance:

> Blended learning can take place while waiting in line in the grocery store or taking the bus home. Its ingredients maybe courses, content chunks, instant messaging pings, blog feedback or many other things. Interaction is the glue that holds all these pieces together. Interaction comes in many forms, not just learner and instructor, but also learner-to-content, learner-to-learner and learner-to-infrastructure. Interaction can create an experience so compelling that it makes workers hungry to learn and drives otherwise sane people to pay four dollars for a cup of coffee at Starbucks. (p. 19)

The next section discusses taking full advantage of this affordance.

2.3.5 Khan's Octagonal Framework

To fully utilise the affordance described in the previous section, closer scrutiny of specific blended learning environments is necessary (Garrison et al., 2000; Gray & Tobin, 2010;

Rowe et al., 2012). As discussed in Chapter 1, one of the primary drivers for change to blended learning at the institution in this study was perceived to be based on an economic imperative. Little, if any, attention was paid to optimising the pedagogical affordances of blended learning. This study focuses on the learner and teacher at the core of the blended learning enterprise to investigate how more effective teaching and learning choices can be made to meet students' needs to achieve and be engaged in their learning.

H. Singh (2003) adapted Khan's (2003) Octagonal Framework, which served as a guide to plan, develop, deliver, manage and evaluate blended learning programs. While this framework is more useful at a strategic level, it addresses the perceptions of the key stakeholders, learners and teachers, who are the focus of this study. Hence, it provides a useful framework to examine the blended learning environment in the tertiary institution in this study.

This framework proposes that various factors must be addressed to create a meaningful learning environment (H. Singh, 2003). These factors are interrelated and interdependent. The framework has eight dimensions: institutional, pedagogical, technological, interface design, evaluation, management, resource support and ethical (see Figure 2.3).

Figure 2.3: Khan's Octagonal Framework (H. Singh, 2003)

The **institutional** dimension addresses issues concerning organisational, administrative and academic affairs and student services. Staff involved in planning a learning program can ask questions related to the preparedness of the faculty or department, availability of content and infrastructure, and learners' needs (Nsofor et al., 2014).

The **pedagogical** dimension is concerned with the combination of content that has to be delivered (content analysis), learner needs (audience analysis) and learning objectives (goal analysis). This dimension addresses a scenario where all learning goals in a given course are listed, and the most appropriate delivery method is chosen. For example, if a learner is expected to demonstrate a graphic design or computing skill, then using video or animation as part of the blend is appropriate. If a learner is expected to develop speaking skills for a seminar presentation, then using a discussion as one of the elements in the blend would be an appropriate choice (Nsofor et al., 2014).

The **technological** dimension examines issues that need to be addressed, including creating a learning environment and the tools to deliver the learning program, such as an LMS and a learning content management system that catalogues the learning program's actual content (online content modules). Technical requirements, such as the server that supports the learning program, access to the server, bandwidth and accessibility, security and other hardware, software, and infrastructure issues, also need to be addressed (Nsofor et al., 2014).

The **interface design** dimension addresses factors related to the user interface of each element in the blended learning program. It must be ensured that the user interface supports all the elements of the blend, such as content structure, navigation, graphics and help. For example, in a higher education course, students may study online and then attend a face-to-face class session with the teacher. The blended learning course should allow students to assimilate both the online learning and the class session equally well (Nsofor et al., 2014).

The **evaluation** dimension relates to the ability of the program to evaluate how effective a learning program has been and evaluate each learner's performance. In a blended learning program, the appropriate evaluation method should be used for each delivery type (Nsofor et al., 2014).

The **management** dimension addresses issues related to the management of a blended learning program, such as infrastructure and logistics to manage multiple delivery types, registration and notification and the scheduling of the different elements of the blend (Nsofor et al., 2014).

The **resource support** dimension deals with making different types of resources (offline and online) available for learners and organising them. Resource support could also be a counsellor or teaching staff member always available in-person, via email or a chat system (Nsofor et al., 2014).

The **ethical dimension** identifies the ethical issues that need to be addressed when developing a blended learning program. Issues such as equal opportunity, cultural diversity, bias, geographical diversity, information accessibility, etiquette and legal issues, including copyright, are also addressed in this dimension (H. Singh, 2003).

This framework provides a useful context to research the efficacy of the blended learning environment in the institution in this study from a student and teacher stakeholder perspective. At the same time, the affordances of the blended learning environment need to be investigated in terms of its effects on the quality of the learning process and the outcomes for learners (Garrison et al., 2000). Garrison et al. (2000) conducted research to create a conceptual framework that identified elements they considered crucial prerequisites for a successful higher educational experience. This framework is discussed in the next section.

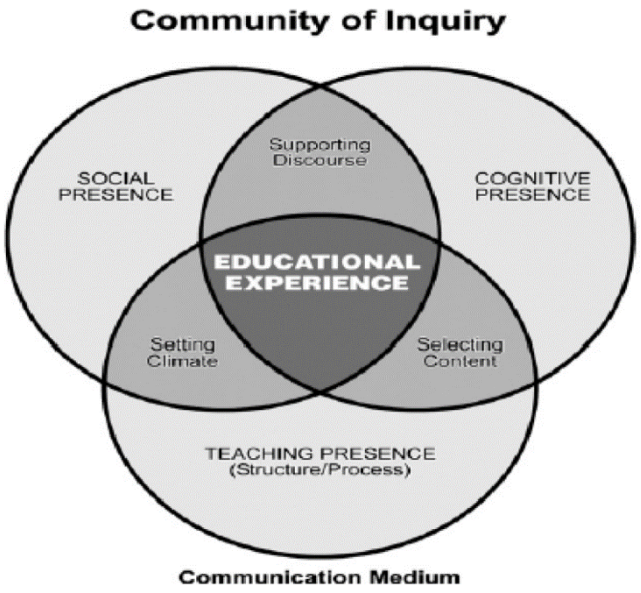
2.3.6 Community of Inquiry Framework

While numerous theoretical constructs exist for analysing teaching and learning in traditional face-to-face environments (Fraser, 1998; Hattie, 2012; Larsen, 2014), one construct that has garnered significant attention in higher education for examining educational and transactional issues in online learning is the community of learners (Garrison & Arbaugh, 2007). Higher education has consistently regarded ‘community’ as essential for supporting collaborative learning and discourse, which are associated with higher levels of learning (Garrison et al., 2000). Despite the potential for disconnectedness in online learning communities, evidence shows that a sense of community can indeed be fostered online (Rovai, 2002a; Thompson & MacDonald, 2005).

Early online learning research emphasized social presence, but Henri (1992) shifted the focus to the cognitive dimension. This shift inspired Garrison et al. (2000) to develop a comprehensive framework to guide online learning research and practice (see Figure 2.4; Garrison & Arbaugh, 2007). The framework comprises three elements—social presence,

teaching presence, and cognitive presence—each with specific categories and indicators to define and guide the coding of transcripts (see Figure 2.4). The genesis of this framework can be traced back to the work of John Dewey and aligns with constructivist approaches to learning in higher education (Garrison & Arbaugh, 2007).

Figure 2.4: Elements of an Educational Experience (Garrison & Arbaugh, 2007).



As shown in Figure 2.4, a worthwhile educational experience is embedded within a Community of Inquiry (CoI) that comprises teachers and students—the key participants in the educational process. The model of this CoI assumes that learning occurs within the community through the interaction of three core elements: cognitive presence, social presence and teaching presence (Garrison et al., 2000).

Table 2.1 shows the three essential elements in a CoI, the indicators of those elements that occur for a true CoI and the categories into which the indicators have been grouped (Garrison et al., 2000). Garrison and Vaughan (2008) described the CoI as the 'heart of higher education experience' shaped by 'purposeful, open, and disciplined critical discourse and reflection' (Garrison &Vaughan, 2008, p. 14). The purpose of the CoI framework is to guide the use of instructional technologies in creating and maintaining deep and meaningful learning by reflection and discourse in blended learning environments (Garrison & Akyol, 2009). The underlying foundational perspective of the framework is a collaborative, constructivist view of teaching and learning (Garrison & Anderson, 2003). Collaborative constructivism is, in effect, the recognition of the

interplay between individual meaning and socially redeeming knowledge; hence, a CoI is a personal and public search for meaning and understanding (Cleveland-Innes et al., 2007).

Table 2.1: Community of Inquiry Coding Template

Elements	Categories	Indicators (examples only)
Cognitive presence	Triggering event	Sense of puzzlement
	Exploration	Information exchange
	Integration	Connecting ideas
	Resolution	Apply new ideas
Social presence	Emotional expression	Emotions
	Open communication	Risk-free expression
	Group cohesion	Encouraging collaboration
Teaching presence	Instructional management	Defining and initiating discussion topic
	Building understanding	Sharing personal meaning
	Direct instruction	Focusing discussion

As shown in Figure 2.4, a worthwhile educational experience is embedded within a CoI composed of teachers and students—the key participants in the educational process. This focus on students and teachers and their interaction in the blended learning environment is of interest to this study. The framework assumes that learning occurs within the community through the interaction of three core elements: teaching presence, social presence and cognitive presence. In short, the CoI framework is a dynamic model of these core elements necessary for the development of community and the pursuit of inquiry in an educational environment (Swan et al., 2009). Each of the three elements are now discussed in turn.

2.3.6.1 Teaching Presence

Garrison et al. (2010) contended that establishing and maintaining a community of enquiry requires a considered, focused, attentive teaching presence. When viewed in this way, teaching presence is defined as the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes (T. Anderson et al., 2001). The first teaching presence responsibility is establishing curriculum content, learning activities and timelines. The second responsibility is monitoring and managing meaningful collaboration and

reflection. The third is ensuring that the community reaches the intended learning outcomes by diagnosing needs and providing timely information and direction (Garrison et al., 2010).

In the blended learning environment, the teacher's decision-making in directing learning activities, providing feedback, managing classroom interaction between the teacher and learners and between learners and facilitating learning for learners to achieve educational outcomes is pivotal. With the teacher responsible for key decision-making, how does the teacher–student interaction affect student achievement and engagement? This is one of the key questions of this study; to examine the social interaction in the blended learning environment, the model proposes social presence. Cognitive presence is discussed next before discussing social presence because this overlapping presence provides the context or need for 'inquiry' (Akyol & Garrison, 2010).

2.3.6.2 Cognitive Presence

Cognitive presence reflects the learning and enquiry process. Cognitive presence goes to the heart of the CoI (Garrison, 2009). It is defined by the inquiry process where learners are presented with a problem or issue and construct meaning and confirm understanding through re-creations between discourse and reflection (public and private worlds; Garrison, 2009). Cognitive presence is made operational through the Practical Inquiry Model (see Table 2.1), which reflects the phases of the educational process (Garrison & Anderson, 2003). The first phase is the recognition and definition of the problem or issue. The second phase is the investigation of the problem or issue by collecting relevant information and perspectives through individual searches and discourse. The third phase is making sense of the existing information to reach a solution through reflection, sharing and critically analysing the best options. The fourth phase is to test the best solution through application vicariously or directly (Ono, 2013).

Typically, the application phase catalyses the restarting of the inquiry process again to rethink, refine or construct a better solution. Purposeful reflection and discussion focused on worthwhile educational goals is the essence of cognitive presence (Garrison, 2009). Another key construct of cognitive presence is the importance of metacognitive awareness (Garrison, 2009). Advancing through the phases of inquiry can be greatly facilitated by learners' awareness and understanding of the expectations and the inquiry

cycle. The evidence suggests that progression is largely influenced by teaching presence (Garrison & Arbaugh, 2007). Ensuring that cognitive presence includes integration and resolution is dependent upon the design of appropriate tasks, facilitation and direction—the three categories of teaching presence (Garrison, 2009), as noted in the previous section.

2.3.6.3 Social Presence

Social presence in online learning has been described as the ability of learners to project themselves socially and emotionally, thereby representing themselves as 'real people' in mediated communication (Garrison & Arbaugh, 2007). Of the three types of presence included in the CoI framework, social presence has been the most extensively studied in both online and face-to-face course settings (Garrison et al., 2010). Social presence is defined as 'the ability of participants to identify with the community (e.g., course of study), communicate purposefully in a trusting environment, and develop inter-personal relationships by way of projecting their individual personalities' (Garrison, 2009, p. 352). Garrison et al. (2010) contended that theoretically, the CoI framework suggests that social presence is a mediating variable between teaching presence and cognitive presence, which means that it is a responsibility of teaching presence and the condition for creating cognitive presence (that is, collaborative enquiry).

2.3.7 Synthesising the 'Presences'

A significant body of research has used the CoI framework to study different aspects of online and blended learning environments since the model was proposed in 2000 by Garrison et al. (Arbaugh & Hwang, 2006; Armellini & De Stefani, 2015; Ice et al., 2007; Shea & Bidjerano, 2009; Swan et al., 2009). The CoI framework and its focus on collaborative constructivist approaches to learning in higher education has precipitated a growing interest in online learning communities (Garrison, 2009) and, latterly, in blended learning communities (Armellini & De Stefani, 2015). Community is considered essential to engage learners in collaborative learning activities. The framework was created to study the dynamics of online learning communities (Garrison, 2009).

The key to understanding the complex dynamics of a CoI is the composition and interaction of social, cognitive and teaching presence in online and blended learning environments. This study offers the opportunity to advance the understanding of the CoI

framework by focusing on the interaction of teachers and students in blended learning environments. The interrelationship between the three elements of teaching presence, social presence and cognitive presence are examined using the data gathered on student–teacher interaction, student achievement and student engagement in the blended learning environment in the study. A survey instrument was designed to gather data on the three presences in relation to answering this study's research questions. This survey instrument combined the QTI and four scales from the SEQ designed by Coates (2011). The final part of the instrument asked respondents a set of open-ended questions.

2.3.8 Blended Learning Summary

Reviewing the research on blended learning has revealed that the term has multiple meanings depending on who is using it and in what context (C.J. Bonk et al., 2006; Chen & Jones, 2007; López-Pérez et al., 2011; Osguthorpe & Graham, 2003). Driscoll (2003) identified four eclectic definitions, each focusing on combinations of job tasks and one of the following: modes, pedagogical approaches, or instructional technology. Graham (2006) further advanced the field by referring to blended learning systems falling into categories based on the primary objective of the blend, distinguishing between enabling blends, enhancing blends and transforming blends. The transforming blends are of most interest to this study. Smythe (2011) provided the definition that this study uses, offering a combination of dimensions and combining them into various permutations to optimise learning outcomes or student achievement. The work of Bozkurt (2022) was presented to provide a post pandemic perspective of blended learning. Thereafter, the transformative potential of blended learning was discussed, exploring the work of Garrison and Kanuka (2004), Khan's (2003) Octagonal Framework and Garrison et al.'s (2000) CoI framework. In the next section, the theoretical underpinning of the design of the TISEQ is presented.

2.4 Student–Teacher Interaction

The interaction between students and teachers in blended learning environments is a key concern of this study. A review of the literature shows a significant body of research in the field of student–teacher interaction, which originated from earlier work on general interpersonal behaviour. A brief overview of general interpersonal behaviour is presented before discussing student–teacher interaction in the blended learning environment.

2.4.1 Interpersonal Behaviour

Following Wubbels and Brekelmans (2005), teacher–student interaction in blended learning environments is conceptualised as a form of communication. The assumption Wubbels and Brekelmans (2005) made was that every behaviour someone displays in the presence of someone else is communication. This choice is an element of the so-called 'systems approach', which assumes that one has to communicate when in the presence of someone else; whatever a person's intentions are, others will assign meaning to this behaviour. For example, if teachers ignore students' questions because they do not hear them, students might make a variety of inferences (such as the teacher might be too busy, the teacher might think the students are too dull to understand, or the teacher might consider the questions impertinent; (Wubbels & Brekelmans, 2005). The systems approach focuses on the pragmatic aspects of communication: the effects on the other involved. According to the systems approach, every form of communication has a content and a relation aspect (Watzlawick et al., 1967).

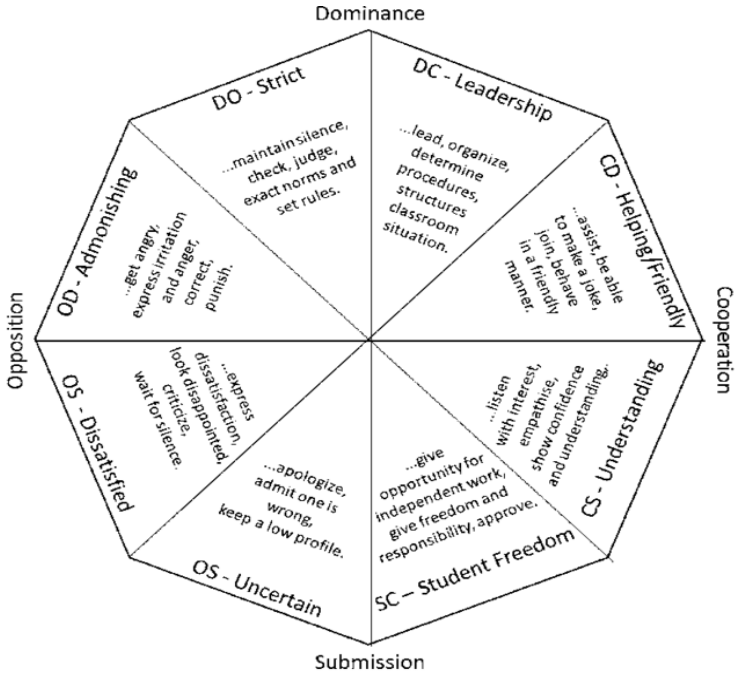
Wubbels and Brekelmans (2005) distinguished two levels of communication. The lowest level consists of a single unit of behaviour: the message level having a content and a relation aspect. For example, the words 'I want to help you to learn' (content aspect) can be combined with either a smile or a frown (relation aspect). When the students and the teacher have interacted over time, their mutual perceptions are established and re-established, forming a stable basis for reactions. Typical relational patterns then develop, and these relations form the second level: the pattern level.

Consequently, Wubbels and Brekelmans (2005) developed their conceptualisation of the interpersonal perspective as they focused on the perceptions of students of the behaviour of their teachers. They further argued that their focus was 'not so much on the stated intentions of the teacher, but on the students', perceptions evoked by what occurs in the classroom, what students think about their teacher, and what they learn and do' (Wubbels & Brekelmans, 2005, p. 7). These perceptions of students about their relationships with their teachers have been studied in the Model for Interpersonal Behaviour (MITB), which is based on Leary's (1957) work and its application to teaching (Wubbels et al., 1985).

In conceptualising an interpersonal perspective on teaching, Wubbels et al. (1985) developed the MITB to map interpersonal teacher behaviour extrapolated from the work

of Leary (1957) (Den Brok, Brekelmans & Wubbels, 2006). Interpersonal behaviour has been investigated using the Leary model (or related circumplex models) in a variety of settings and cultures (Den Brok, Fisher & Scott, 2006). The dimensions of the Leary model are widely accepted and used to interpret interpersonal behaviour (Charalampous & Kokkinos, 2013). Leary's (1957) model (see Figure 2.5) maps teacher behaviour in terms of two dimensions: an influence dimension (to what degree the teacher is in control in the teacher–student relationship) and a proximity dimension (the degree of cooperation between teacher and students). The influence dimension is characterised by teacher dominance (D) on one end of the spectrum and teacher submission (S) on the other. Similarly, the proximity dimension is characterised by teacher cooperation (C) on one end and teacher opposition (O) on the other. These can be depicted as a two-dimensional plane that is further subdivided into eight categories or sectors of behaviour: leadership (DC), helpful/friendly behaviour (CD), understanding behaviour (CS), allowing student freedom (SC), uncertain behaviour (SO), dissatisfied behaviour (OS), admonishing behaviour (OD) and strictness (DO). Each sector can be described in terms of the two dimensions: leadership, for example, contains a high degree of influence and some degree of cooperation (Den Brok, Fisher, Wubbels et al., 2016).

Figure 2.5: The Model for Interpersonal Behaviour (Wubbels & Brekelmans,2005)



The MITB has been used in the development of the QTI to gather students' and teachers' perceptions of interpersonal teacher behaviour (Wubbels et al., 1991; Wubbels & Levy, 1993). Wubbels et al. (1985) developed the QTI to map students' and teachers' perceptions of teacher interpersonal behaviour. The original QTI consisted of 77 items in the Dutch language using a Likert-type five-point scale (Den Brok, Brekelmans and Wubbels, 2006). In the next section, the development of the QTI is discussed.

2.4.2 Questionnaire on Teacher Interaction

The QTI was first developed in the Netherlands between 1978 and 1984 (Wubbels et al., 1985). Its development involved four instances of testing using different sets of items. Interviews with teachers, students, teacher educators and researchers were conducted to evaluate the face validity of items (Den Brok, Fisher & Scott, 2006). The American version was created between 1985 and 1987 by translating the set of 77 items from the Dutch version, adding several items (since several items could be translated in more than one way) and adjusting this set of items based on three rounds of testing (Wubbels & Levy, 1991). Following the rounds of testing, the American version contained 64 items. This American version was initially also used in Australia (Wubbels & Levy, 1993) until a more economical 48-item selection was developed (Den Brok, Fisher & Scott, 2006).

The QTI was developed to assess perceptions of teacher-student interpersonal behaviour within a traditional classroom learning environment (Rickards, 1998). The commonly used Australian short version of the instrument includes 48 five-point Likert scale items. It measures perceptions of teacher behaviour according to eight dimensional scales (six items per scale), with numerous studies using this approach (Coll et al., 2001; Den Brok et al., 2005; Fisher, Fraser & Creswell, 1995; Fisher, Harrison et al., 1995; Fisher & Rickards, 1998; Wei et al., 2009, 2015). Each dimension describes an attribute of a given teacher's interpersonal behaviour. The eight dimensional scales are Leadership, Helping/Friendly, Understanding, Responsibility and Freedom, Uncertain, Dissatisfied, Admonishing, and Impatience/Strict. These eight scales (subsets of questionnaire items) conform to the eight sectors of the model for Interpersonal Teacher Behaviour along with the two underlying dimensions of Influence and Proximity of the MITB (Engelbrecht et al., n.d.) as shown in Figure 2.5. The QTI has been translated into more than 15 languages and has been the focus of a variety of studies in the secondary and tertiary education

sectors (Den Brok et al., 2004). A selection of studies in the secondary and tertiary sectors that have used the QTI are now reviewed.

2.4.3 Studies Using the QTI

Most of the studies using the QTI have been conducted at the secondary school level in mathematics and science classrooms (Rickards, 1998). The most common theme of historical classroom environment research has focused on associations between student outcomes (especially achievement and attitudes to the class) and student perceptions of their learning environment (Fraser & Walberg, 2005). This research has consistently shown links between student outcomes and the context of the classroom environment. However, outcome–environment relationships typically are more consistent and stronger for attitudes than for achievement (Fraser & Walberg, 2005). The findings from studies involving the QTI are consistent in that researchers have confirmed an empirical link between the quality of teacher–student relationships and student achievement and especially attitudes (Den Brok et al., 2005).

Wubbels and Brekelmans (2005) note that several studies have been conducted on the reliability and validity of the QTI. These have included, among others, Dutch (e.g. Brekelmans et al., 1990; Den Brok, 2001; Wubbels et al., 1985), American (Wubbels & Levy, 1991) and Australian (Fisher, 1992; Fisher, Harrison et al., 1995) studies. Recently, a cross-national validity study was completed comparing students' responses to the questionnaire in Singapore, Brunei, the United States, The Netherlands, Slovakia and Australia (Den Brok et al., 2003). In all these studies, both reliability and validity were satisfactory (Wubbels & Brekelmans, 2005). While there have been several studies in secondary learning environments using the QTI, there has not been the same proliferation of studies in the higher education (tertiary) environment. Two studies of note are now discussed.

Coll et al., (2001) conducted a study at the University of the South Pacific in Fiji (a Pacific Island nation) in which, the QTI instrument was administered to first- and second-year science students (n = 257), catering for 12 different ethnicities. The objectives of this study were first to determine if the QTI instrument was validated in a diverse, multicultural setting; second, the data from the QTI were used to investigate how students at the tertiary level see the student–teacher interpersonal interaction in their classrooms;

and third, to investigate if gender or ethnicity influenced perceptions of student–teacher interpersonal interaction. Their findings indicated that the QTI had good reliability and validity for the multicultural context in which the study was conducted (Coll et al.,2001).

In investigating the student–teacher interpersonal interaction in classrooms, Coll et al.'s (2001) study found that the teachers, having been subjected to directive teaching in transmissive models themselves, used the same transmissive model in their own teaching. They concluded that the prevalent transmission model of teaching was a barrier to students achieving learning with understanding. They also found that ethnicity had very little influence on perceptions of student–teacher interpersonal interaction. In analysing the data in relation to gender and perceptions of the student–teacher interpersonal interaction, they found statistically significant differences in perceptions of teaching style for five scales, namely, Understanding, Uncertain, Admonishing, Student Responsibility and Freedom, and Dissatisfied. The study by Coll et al. (2001) had similar objectives to this study. The findings of both studies are compared and discussed in Chapter 4.

Fraser et al. (2010) used the QTI in a university setting in Indonesia. Their study had three aims: first, to develop a valid and reliable instrument in the Indonesian language to assess instructor-student interactions; second, to describe and compare a university computer science course and a management course in terms of instructor-student interactions; and third, to investigate associations between students' perceptions of instructor-student interactions and student outcomes of achievement and attitude. The sample comprised 422 students from 12 research methods classes in a large private university in Jakarta, Indonesia. The students were selected from two departments, namely, computer science and management. They used the QTI and an attitude scale. The instruments were translated into Indonesian. They concluded that the QTI had satisfactory validity for the Indonesian version based on its factor structure, pattern of scale intercorrelations, internal consistency reliability and ability to differentiate between students' perceptions in different classes.

In terms of perceptions of instructor interpersonal behaviour, their analysis revealed that students enrolled in management courses perceived their instructors as showing significantly more positive interaction qualities in terms of Leadership, Helping/Friendly and Understanding behaviours compared with students enrolled in computer science courses. The results also showed that students in management courses consistently

perceived their instructor's interpersonal behaviour more favourably on all scales than computer science students.

In investigating associations between student outcomes and instructor-student interaction, they used the grade obtained on completion of the research methods unit to measure students' achievement. They also use a semantic differential scale designed specifically for the study to measure student's attitudes. The findings replicated past research, showing a positive link between a favourable classroom learning environment and improved student achievement and attitudes. Simple correlation and multiple regression analyses revealed positive associations between student outcomes (achievement and attitudes) and more favourable teacher–student interactions (i.e. higher scores on the QTI scales with a positive connotation [Leadership, Helping/Friendly and Understanding behaviours] and lower scores on the QTI scales with a negative connotation [Uncertain, Dissatisfied, Admonishing and Strict behaviours]; Fraser et al., 2010).

Fraser et al. (2010) research was instructive to this study in that it investigated the association between student–teacher interaction and achievement and attitudes. This study investigates the impact of student–teacher interaction on student achievement. Fraser et al. (2010) also concluded that including qualitative data would have helped explain patterns of associations and determine whether students' perceptions of the interpersonal behaviour of teachers could be changed, thereby enhancing students' achievement. This study uses a combination of quantitative data (gathered using the QTI and achievement grades of students) and qualitative data (gathered using open-ended questions and focus group interviews with students) to explore patterns of associations to advance the understanding of teacher behaviour on student achievement.

2.4.4 More recent studies utilizing the Questionnaire on Teacher Interaction (QTI)

More recently, other studies have provided valuable insights into how teacher-student relationships impact learning outcomes in higher education. Cresswell and Fisher (2010) explored the use of the QTI in the professional development of secondary school teachers in Western Australia. Their study also collected feedback from students on their perceptions of their teachers' interpersonal behaviours. The teachers then reflected on the results during professional development sessions, which allowed them to identify areas where their teaching strategies could be improved. The findings showed that by using the

QTI, teachers gained a deeper understanding of how their behaviour influenced student engagement and were able to make meaningful changes to enhance classroom dynamics. Their study concluded that incorporating the QTI into ongoing professional development could be an effective way to foster more positive teacher-student relationships and improve the overall learning experience. This insight is valuable for this thesis and will be considered further in the conclusions and recommendations chapter (Chapter Six).

Similarly, Hagenauer and Volet (2014) conducted a large-scale literature review on teacher-student relationships in higher education, which pointed to a notable gap in research on this topic. They argued that while significant work has been done to understand teacher-student interactions in primary and secondary education, higher education has not received the same level of attention. The review highlighted the pivotal role of teacher-student relationships in fostering student engagement, motivation, and academic success. It suggested that the lack of focus on this topic in higher education learning environments could be addressed by using tools like the QTI to assess and enhance the quality of these interactions. Hagenauer and Volet (2014) called for more empirical research, like the approach used in this thesis, to better understand how teacher-student relationships affect learning in higher education and how these relationships can be improved.

Building on the need for more research, as noted by Hagenauer and Volet (2014), Tormey (2021) conducted a study using the Class Affective Relationship Inventory (CARI) an instrument developed from the QTI framework, to assess dimensions such as affection, attachment, and power within these relationships. The CARI is a 15 item questionnaire based on a seven point scale. Their sample comprised 851 university students across various disciplines and they examined the multidimensional nature of student-teacher relationships. The findings indicated that positive student-teacher relationships, characterized by warmth, understanding, and a balanced use of authority, led to higher levels of student motivation and academic performance. The study demonstrated that the quality of teacher-student relationships was crucial not only for academic outcomes but also for students' emotional well-being. Tormey recommended that educators focus on developing all dimensions of these relationships to create a more supportive and effective learning environment for students. While the focus of Tormey's (2021) study is on the emotional quality of student-teacher interactions, it is suggested that there is need to

explore whether there is evidence of systematic bias in students' emotional responses to their teachers, based on their gender or ethnicity. This thesis focuses on gender and cultural background and its intersection with teacher student interaction, among other things, especially in the qualitative section of this study.

In the foreward to Effective Teaching Around the World edited by Maulana, Helms-Lorenz and Klassen (2023), Hattie (2023) notes that:

> The greatest travesty of COVID schooling is rushing back to the old normal and not pausing to learn about what was so effective during COVID teaching to augment our older grammar of schooling. In the old grammar of schooling, teachers talk a lot (80-90%), ask 100-150 questions a day requiring less than three-word answers about the facts, and too many students come to class to watch teachers work. It is not possible in COVID teaching to replicate this, as teachers moved from in-front control to triage, from talking to listening, to (gradually) releasing their responsibility, and teaching students to become their own teachers and work effectively efficiently with their peers (p. vii).

It is in this context that the affordances of blended learning in higher education institutions post Covid, need to be carefully considered to support students' learning and ultimately their achievement and engagement. In a broader, cross-cultural context, Hofkens, Pianta, and Hamre (2023), writing in the same collection of papers, explored teacher-student interactions across various countries, examining how these relationships support student learning regardless of cultural differences. The study reviewed existing research and referenced the QTI as one of the effective tools used to measure teacher-student interactions in diverse educational settings. The authors identified key components of successful interactions, including emotional support, classroom organisation, and instructional support. These elements were found to be universally important in promoting positive learning outcomes. The study concluded that while teacher-student interactions are influenced by cultural contexts, the fundamental aspects of these relationships are consistent across the globe. Hofkens, Pianta, and Hamre (2023) recommended the use of standardized tools like the QTI and the tool they used, the Classroom Assessment Scoring System (CLASS) to assess and improve these interactions, ensuring that teachers in various cultural settings can provide the support needed to foster student success.

Other recent studies have utilized the QTI to examine the intersections of culture and gender in teacher-student interactions within higher education. These investigations provide valuable insights into how cultural backgrounds and gender dynamics influence educational experiences and outcomes.

Larry and Wendt (2021) examined the predictive relationship between high school students' gender, ethnicity, science self-efficacy, teacher interpersonal behaviours (measured by the QTI), and science achievement in an urban school in the United States. The research involved a diverse student population and utilized hierarchical multiple regression analysis. The findings indicated statistically significant relationships between students' gender, science self-efficacy, and science GPAs, as well as between certain teacher interpersonal behaviours subscales and student achievement. The study highlighted the complex interplay of gender, ethnicity, and teacher-student interactions in influencing academic outcomes, underscoring the need for culturally responsive teaching practices. Given that the concerns of the study by Larry and Wendt (2021) are similar to this study and they note a paucity of research in this area globally, this study will contribute to the exploration of gender and cultural background in relation to teacher-student interactions, achievement and engagement.

2.4.5 Summary of Teacher–Student Interaction

Student–teacher interaction has gained much research attention through investigations of student–teacher interpersonal behaviour (Wubbels & Brekelmans, 2005). Wubbels et al. (1985), advancing the work of Leary (1957), developed the MITB, which was used widely to investigate student–teacher interpersonal behaviour in a range of settings (Charalampous & Kokkinos, 2013). This model was used as the basis for developing the QTI used in this study. A selection of studies using the QTI pertinent to this study was then discussed. The measures used to determine student achievement are discussed in the next section.

2.5 Student Achievement

In numerous studies investigating associations between teacher–student interaction and achievement, achievement is typically measured using the student’s end-of-course results (Chung, 2016; Eccles, 2006; D. Henderson et al., 2000; D. G. Henderson & Fisher, 2008;

NeSmith, 2003; Sivan & Chan, 2013; Wei et al., 2009). In this study, students were asked to record their anticipated achievement scores, which were then compared with their end-of-course results. None of the other studies reviewed used this approach. In the next section, student engagement is discussed.

2.6 Student Engagement in Higher Education

2.6.1 Student Engagement Overview

Following on from 'the student experience' and 'research-led teaching' before it, 'student engagement' had become the focus of attention among those seeking to enhance learning and teaching in higher education (Trowler, 2010). Higher education institutions like the one in this study face increasingly difficult economic conditions, so student retention and success are at the forefront of decision-making. In fact, in 2009, the NZ government began to publish data on each provider's performance against four output-focused educational performance indicators: course completion, qualification completion, retention and progression. These four measures also formed the basis of the performance-linked funding policy and some funding decisions by the Tertiary Education Commission (New Zealand Productivity Commission, 2016). Consequently, focusing on student engagement matters since decision-makers in higher education believe that if student engagement can deliver on its promises, it could positively affect course completion, qualification completion and retention and make progression possible (Manukau Institute of Technology Strategy Document, 2010).

For the purposes of this study, Trowler's (2010) description of 'student engagement' is used as a working definition:

> Student engagement is concerned with the interaction between the time, effort and other relevant resources invested by both students and their institutions intended to optimise the student experience and enhance the learning outcomes and development of students and the performance, and reputation of the institution. (p. 2)

2.6.2 Theoretical and Conceptual Underpinning of the Term 'Student Engagement'

The term 'student engagement' has its historic roots in a body of work concerned with student involvement in their learning, particularly in North America and Australasia, where it has been firmly entrenched through annual large-scale national surveys (Trowler,

2010). The seminal authors in this field are George Kuh and Hamish Coates. Kuh was the founding director of the National Survey of Student Engagement in the United States (Morgenstern, 2020) and has published widely in this area over the last two decades (see Kuh, 2001, 2003, 2008, 2009, 2016; Kuh & Gonyea, 2015; Kuh & Lingenfelter, 2017; Pike et al., 2011). Coates was the project director for the 2008 Australasian Survey of Student Engagement (AUSSE) or Staff Student Engagement Survey (Coates, 2009).

According to Trowler (2010), Fredricks et al. (2004), drawing on Bloom (1956), identified three dimensions of student engagement, namely, behavioural, emotional and cognitive engagement. Behaviourally engaged students would generally comply with behavioural norms, such as attendance and involvement, and would demonstrate the absence of disruptive or negative behaviour. Students who engage emotionally would experience emotive reactions such as interest, enjoyment or a sense of belonging. Cognitively engaged students would be invested in their learning, would seek to go beyond the requirements and would relish challenge (Trowler, 2010). For the purposes of this study, only the emotive and cognitive dimensions of engagement are relevant.

Also, as noted in the working definition of engagement earlier in this section, the intersection of what the institution and the student do in a mutually responsive relationship is examined in greater detail in this study. The conception of the relationship between the student and institution is in line with Kuh's (2009) definition of engagement, as noted by Trowler (2010), incorporating both the time and effort students devote to activities that are linked to desired outcomes of their learning environments and what institutions do to encourage students to participate in these activities.

Similar to Kuh (2009), Coates (2009) argued that student engagement is a notion specifically focused on students and their interactions with their institution. He noted further that while the concept was considered in terms of 'time on task', contemporary perspectives now relate to aspects of teaching, the broader student experience, learners' lives beyond the institutions they are in and institutional support. Students are at the centre of conversations about student engagement—conversations that focus directly on enhancing individual learning and development. The concept of student engagement is based on:

> The premise that learning is influenced by how an individual participates in educationally purposeful activities. While students are seen to be responsible for constructing their knowledge, learning is also seen to depend on institutions and staff generating conditions that stimulate and encourage involvement. (Coates, 2009, p. 15)

Coates (2009) further observed that the education enterprise involves inputs, processes and outcomes at various levels, typically systems, institutions, teachers and students. Consequently, Figure 2.6 shows—in the shaded areas—how the Australasian Survey of Student Engagement (AUSSE) uses these inputs to collect data about learners' demographics and teachers' backgrounds, learners' involvement in educational practices, and pedagogical and institutional supports.

Figure 2.6: Australasian Survey of Student Engagement (AUSSE) Coverage of the Indicators of Education Systems (INES) Framework (Coates, 2009)

	Outcomes	Processes	Inputs
Learner	Learning outcomes	Learning involvement	Learner background
Teacher		Teaching approaches and support	Teacher backgrounds
Institution		Institutional supports	
System			

Using the framework illustrated in Figure 2.6, the AUSSE explores six areas of student engagement, including both aspects related to student involvement and institutional support, as shown in Figure 2.7.

Figure 2.7: Six Areas the Australasian Survey of Student Engagement (AUSSE) Explores (Coates, 2009)

Academic Challenge	Extent to which expectations and assessments challenge students to learn
Active Learning	Students' efforts to actively construct their knowledge
Student and Staff Interactions	Level and nature of students' contact with teaching staff
Enriching Educational Experiences	Participation in broadening educational activities
Supportive Learning Environment	Feelings of legitimation within the university community
Work Integrated Learning	Integration of employment-focused work experiences into study

From 2007, The AUSSE has grown to become the largest educationally focused cross-institutional survey of current students in Australasia (Coates, 2009). It was first administered in 2007 with 20 Australian and five NZ institutions. In 2008, 29 institutions participated; in 2009, 35 institutions in Australasia participated; and in 2010, 55 institutions—including universities, TAFEs, private higher education providers and institutes of technology and polytechnics (ITPs)—participated in the AUSSE survey (Radloff, 2011). In 2011, the last time tis AUSSE was conducted ten Private Training Establishments participated. The institute in this case study was not a participant. ITPs, like the one in this study, offer a wide range of qualifications to equip people with skills for the workplace and teach programs ranging from basic bridging courses and foundation studies up to bachelor's degree level and postgraduate qualifications. While most degree-level and higher qualifications are taught at universities, ITPs also offer degree-level programs in more vocationally focused areas (Radloff, 2011). For this study, only four of the six scales were used: Academic Challenge, Active Learning, Student and Staff Interactions and Supportive Learning Environment. This is covered in greater detail in

Chapter 3. The next section discusses student engagement in the NZ higher education context.

2.6.3 Student Engagement in New Zealand Higher Education Contexts

Zepke et al. (2010) conducted a two-year project in NZ to answer the research question, 'How do institutional and non-learning environments influence student engagement with learning in diverse tertiary settings?' (Zepke et al., 2010, p. 5). They explored engagement in diverse settings by using case studies in each of the partner institutions. To answer the first part of their research question, how teachers, external factors and student motivation influence student engagement, they used a student questionnaire to gather data. They concluded by discussing the implications of the answers to all questions for institutions in NZ. One of the key contributions of their research is offering a conceptual organiser of engagement with two features. The first of these identifies the key lenses used in the engagement literature, and the other suggests indicators of outcomes that might be achieved using each lens, as shown in Table 2.2.

Table 2.2: A Conceptual Organiser of Student Engagement

Lenses on engagement	Chosen indicators
Motivation and agency	
(Engaged students are intrinsically motivated and want to exercise their agency)	A student feels able to work autonomously
	A student feels they have relationships with others
	A student feels competent to achieve success
Transactional engagement	
(Students engage with teachers)	Students experience academic challenge
	Learning is active and collaborative inside and outside the classroom
	Students and teachers interact constructively
	Students have enriching educational experiences
Transactional engagement	
(Students engage with each other)	Learning is active and collaborative inside and outside the classroom
	Students have positive, constructive peer relationships
	Students use social skills to engage with others
Institutional support	
(Institutions provide an environment conducive to learning)	There is a strong focus on student success
	There are high expectations of students
	There is investment in a variety of support services
	Diversity is valued
	Institutions continuously improve
Active citizenship	

Lenses on engagement	Chosen indicators
(Students and institutions work together to enable challenges to social beliefs and practices)	Students are able to make legitimate knowledge claims
	Students can engage effectively with others including the "other"
	Students are able to live successfully in the world
	Students have a firm sense of themselves
	Learning is participatory, dialogic, active, and critical
Non-institutional support	
(Students are supported by family and friends to engage in learning)	Students' family and friends understand the demands of study
	Students' family and friends assist with e.g. childcare, time management
	Students' family and friends create space for study commitments

Source: Zepke et al. (2010).

While Zepke et al.'s (2010) study is instructive for further research, applying their theoretical conception of student engagement falls beyond the scope of this study. Nonetheless, in analysing the data gathered, the position taken in their project, particularly their agenda for facilitating student engagement in NZ tertiary institutions, is revisited in Chapter 5.

2.6.4 Student Engagement Summary

Student engagement has become the focus of attention of those seeking to enhance learning and teaching in higher education (Trowler, 2010). The association of funding institutions based on student achievement and engagement has kept these outcomes in sharp focus. The work of Kuh (2003) in the United States and Coates (2009) in Australia has led the research thinking in student engagement. The framework developed by Coates (2009) to develop the AUSSE was used in this study and the four dimensions of the SEQ have been incorporated in the TISEQ, the questionnaire used in this study. In the next section, students' cultural background and research studies related to it are discussed.

2.7 Student Cultural Background, Achievement and Engagement

2.7.1 Student Cultural Background, Achievement and Engagement Overview

One of the primary goals of the modern movement for educational change is to ensure that all students are offered equal opportunities for learning and achievement regardless of their cultural background (D'Ambrosio, 2019). Putting in place and maintaining a model that supports this position is essential since research shows that the achievement

of learners from minority groups in mainstream learning environments is significantly worse when compared with learners from mainstream groups (P.H. Anderson et al., 2006; Gardner et al., 2014; Pillay, 2013). D'Ambrosio (2019) argued that while several explanations for the link between ethnicity and student achievement have been proposed, some of the reasons may include factors, such as language barriers, application of 'monoculture' curricula that are based on the views of one specific group and the potential prejudice (either conscious or unconscious) reflected by teachers and peers (Pang & Park, 2003). Teachers have an impact on students and their learning and achievement. (Brekelmans et al., 2003; Brophy, 1986; Rivkin et al., 2005; Sanders et al., 1997; Stronge et al., 2011). The student–teacher interactions in learning environments and students' cultural backgrounds have received some attention in different countries over the years. Some of these studies are now reviewed.

2.7.2 Research Studies in the Field

Fisher et al., (1997) conducted a study in Australia with the purpose of determining whether there were associations between science and mathematics students' perceptions of the classroom learning environments, the cultural backgrounds and gender of students, and their attitudinal and achievement outcomes. There are some similarities between their study and the research reported in this thesis. A brief overview of their study is presented then the similarities and differences between their study and this study are tabulated.

Fisher et al., (1997) conducted the study with a sample of 3,994 students from 182 co-educational secondary school science and mathematics classes in the 35 schools. Participants completed the 48-item QTI, an attitude-to-class scale and questions relating to cultural background. Achievement on internal school benchmark assessments was used as a student cognitive outcome measure. Their study determined cultural background by asking students what language was normally spoken at home and their parents' birthplace. The objectives of their study were to provide further validation information for the QTI when used with a large Australian sample of science and mathematics classes, to investigate gender differences in students' perceptions of teacher interpersonal behaviour, to investigate cultural differences in students' perceptions of teacher interpersonal behaviour and to investigate whether the nature of interpersonal teacher behaviour (as perceived by students or teachers) affects student achievement and attitude (Rickards & Fisher, 1999).

Statistical analyses confirmed the reliability and validity of the QTI for secondary school science and mathematics students. It was also found that the dimensions of the QTI were significantly associated with student attitude scores. Students' attitude scores were higher in classrooms where students perceived greater Leadership, Helping/Friendly and Understanding Behaviours in their teachers. Female students perceived their teachers more positively than male students, and students from an Asian background tended to perceive their teachers more positively than those from the other cultural groups in their study (Rickards & Fisher, 1999). Their study also suggested that students enjoy the class more if they are given responsibility and freedom, but if they are not, their cognitive achievement is increased. The correlation between cognitive achievement and interpersonal behaviour was not as strong, but there were positive associations with cooperative behaviours and negative associations with oppositional behaviours (Fisher et al., 1997). They concluded that if teachers want to promote favourable student attitudes in class, they should ensure the presence of cooperative interpersonal behaviours. Given that Fisher et al. (1997) used the QTI in a similar way to this study, and their work has been quoted extensively by most researchers who have used the QTI, in a variety of contexts and countries, Table 2.4 shows the similarities and differences between their study and this research.

Table 2.3: Similarities and Differences Between the Two Studies

Item	Fisher et al. (1997)	This Study
Context	• Australian secondary school maths and science classes • Face-to-face learning environment	• New Zealand tertiary institution—Certificate, Diploma, Graduate Diploma and degree programs. • Blended learning environment.
Objectives	• Validate Questionnaire on Teacher Interaction (QTI) • Investigate gender difference in students' perceptions of teacher interpersonal behaviour • Investigate whether the nature of interpersonal teacher behaviour (as perceived by students or teachers) affects student achievement and attitudes	• How does student–teacher interaction affect student achievement and engagement in a blended learning environment? • How does student cultural background affect achievement and engagement in a blended learning environment? • How does student gender affect achievement and engagement in a blended learning environment?
Instruments used and data measures	• QTI • Test of Science Related Attitudes (TOSRA)	• QTI. • Adaptation of the Australasian Survey of Student Engagement (AUSSE); 4 of the 6 scales of the Student Engagement

Item	Fisher et al. (1997)	This Study
	• school benchmark test to measure achievement • identify cultural background using father's place of birth and primary language spoken at home	Questionnaire (SEQ) to measure student engagement. • End-of-course results to measure achievement. • Students' cultural background was indicated by the birthplace of each of their parents and the primary language spoken at home as well as the culture they identified themselves as. • Open-ended questions. Three questions were based on student preferences for study in the face-to-face and online learning environments in relation to their engagement and achievement. • Focus group interviews with students.

Koul and Fisher (2005) conducted a study that investigated cultural background and students' perceptions of science classroom learning environment and teacher interpersonal behaviour in Jammu, India. The main aim of their study was to validate two already existing questionnaires, namely, the QTI and the WIHIC, and then investigate how perceptions of learning environment and teacher interpersonal behaviour in science classrooms vary with students' cultural backgrounds. For the purpose of their study, cultural background was determined by asking students what language they and their parents normally speak at home (Koul & Fisher, 2005).

Students in their study who studied the same core curriculum at school came from 13 different cultural subgroups. The languages spoken at home, a clear indication of their cultural backgrounds, were Hindi, Kashmiri, Dogri, Punjabi, Balti, Pahari, English, Badarwahi, Muzfarabadi, Punchy, Telugu, Urdu and Kistwari. However, only four of these groups contained sufficient numbers for the analyses. These were Hindi (522), Kashmiri (221), Dogri (175) and Punjabi (82), which constituted 98% of the sample. The total sample comprised 1,021 students from 31 science classes from grades 9 and 10 in seven different private co-educational schools (Koul & Fisher, 2005) . The three-part survey (Part 1 QTI, Part 2 WIHIC and Part 3 a question about cultural background) was administered towards the end of the academic school year. This was done so that, first, students would have enough time to get to know their teachers and classmates and, second, teachers would have enough time to establish the learning environment.

The results from this study indicated differences in students' perceptions of their learning environment and teacher interpersonal behaviour that were associated with students'

cultural backgrounds. For both the QTI and WIHIC, the Kashmiri group of students had the most positive perceptions of their classroom environment and teacher interactions. These students had significantly higher means for the Student Cohesiveness, Task Orientation, Cooperation and Equity scales. The Dogri group of students perceived less Involvement and Investigation in their classroom environment than the other three groups involved in the study and had the most negative perceptions of their classroom environment and teacher interaction (Koul & Fisher, 2005).

This significant difference in the perceptions of students coming from these two different cultural groups, Koul and Fisher (2005) argue, could be for the following reason: The Kashmiri community, in general, has a 99% literacy rate and places a high value on education. Consequently, the students from these families enter school positively disposed towards learning and respond in positive ways in class. Conversely, Dogri students come predominantly from families who run local businesses and see this as their career path and, as a result, do not value education as the Kashmiris do. Koul and Fisher (2005) conclude that teachers with students from different cultural backgrounds in their classrooms should not interact with students as a homogenous group but take cultural differences into account when interacting with different students.

Den Brok, Fisher and Scott (2006) conducted a study investigating secondary teachers' interpersonal behaviour in Singapore, Brunei and Australia. The QTI was used to gather data, and there were three research questions that guided the study. The first two research questions related to validation and equivalence of the QTI, and the third research question was, 'Are there differences in student perceptions of interpersonal teacher behaviour in Singapore, Brunei and Australia?' (Den Brok, Fisher and Scott, 2006, p. 84). QTI data were obtained from researchers who administered the questionnaire in the three countries to answer the research questions. The data were then analysed to meet the purposes of their study.

Researchers were asked to provide only data on secondary science teachers to enhance the cross-country comparison. The Singaporean sample consisted of 1,713 students from 50 classes (taught by a similar number of teachers) in nine schools. The average class size in the sample was 34 students. The sample from Brunei consisted of 644 students from 35 classes in 23 schools. The average class size in the Brunei sample was 18 students. The Australian sample consisted of 726 students from 35 classes in 12 schools (Den Brok,

Fisher, Wubbels et al., 2016). The average class size in the Australian sample was 21 students. The representativeness of the sample in Singapore and Brunei was noted as a limitation of the study.

In all three countries, teachers were rated on the positive sides of influence and proximity (see Figure 2.3). Teachers were rated highest on the influence dimension in Brunei and lowest in Australia. However, differences in influence ratings between Australia and Singapore were minimal, with Brunei teachers being rated somewhat differently from teachers in Australia and Singapore. Den Brok, Fisher and Scott (2006) cited Kennedy (2002), who argued that in many Asian countries, Confucian values influence classroom learning and communication. The Confucian code of social conduct has been associated with respect and obedience (towards the teacher), compliant student behaviour and almost unquestionable acceptance of teacher knowledge, harmonious relationships, compromise and moderation of behaviour, student passivity and low uncertainty tolerance (Den Brok, Fisher, Wubbels et al., 2016). Consequently, the above results, Den Brok, Fisher and Scott (2006) noted, are surprising. These results, they argued further, might be owing to subtle differences in meaning of the scales among the countries. Also, these differences might reflect differences in focus: in some countries, strictness or uncertainty may be detected from different cues, or cues may be rated differently in terms of importance, even if (some) equivalence in meaning exists (Den Brok, Fisher, Wubbels et al., 2016).

Another key finding was that while teachers in Brunei were rated lowest on the proximity dimension, they were rated highest on the influence dimension. To some extent, the findings support claims that teachers in countries with large power distance and a more collectivist tendency (for example, Brunei and Singapore) are expected to exert a great deal of power and expertise, and students are expected to follow directions (see Hofstede, 1991; Kennedy, 2002; Liberman, 1994; Lu, 1997; Watkins & Briggs, 1996). While Den Brok, Fisher and Scott (2006) focused on cross-country cultural differences, this study examines learners with different cultural backgrounds in the same learning environment in the same country. It is of interest to this study to investigate these cultural differences in the same learning environment with the same teacher and gauge whether this has any impact on student achievement.

Coll et al. (2010), discussed earlier in this chapter, conducted a study in Fiji, which comprised about 300 islands covering 18,000 square kilometres in the equatorial region

of the Pacific Ocean (Europa Publications, 1994). At the time of their study, the population of approximately 750,000 contained diverse ethnic groups. Two groups—Indigenous Fijians of Melanesian or Polynesian descent and ethnic Indians—are present in approximately equal proportions and comprise over 90% of the population. In their research study, two classroom learning environment questionnaires developed in a Western context were applied to a culturally diverse context, namely, the Pacific Islands. The CUCEI and QTI instruments were administered to classes of first- and second-year science students (n = 257) at a regional university in Fiji containing a total of 12 ethnicities. In terms of the findings of their study, there were few differences in perceptions of teacher–student interaction based on ethnicity, but substantial differences based on gender were found. While their study did not investigate the impact of ethnicity on achievement, it is worth noting that students, irrespective of ethnicity, perceived their interactions with their teachers similarly.

2.7.3 Student Cultural Background, Achievement and Engagement Summary

One of the primary goals of the modern movement for educational change is to ensure that all students are offered equal opportunities for learning and achievement regardless of their cultural background (D'Ambrosio, 2019). Consequently, learning environment research should aim to make this goal a reality (Gardner et al., 2014). Teachers have an impact on students and their learning and achievement. (Brekelmans et al., 1990; Brophy, 1986; Rivkin et al., 2005; Sanders et al., 1997; Sleegers & Fraser, 2003; Stronge et al., 2011; Wright et al., 1997). Various studies have investigated the impact of student–teacher interaction in different countries and in different contexts. Some of these studies were reviewed to compare them to the study reported in this thesis. The results of these studies are compared with the findings and conclusions drawn in this study.

2.8 Literature Review Summary

In this chapter, the literature relating to learning environments research and blended learning has been reviewed, as well as the literature relating to the key variables present in each of the research questions. The chapter began by outlining the origins of learning environment research, and assessment tools used to investigate learning environments were presented. Thereafter, literature related to the blended learning environment was discussed with particular attention to the transformative potential of blended learning.

Following that, attention was given to studies associated with the key variables present in this study, particularly teacher-student interaction. A detailed discussion then ensued on the development of the QTI, and various studies using the QTI were presented. The other key variables in the study, namely, achievement, student engagement and cultural background, were then the focus of attention. In each of these discussions, relevant studies were discussed. Student engagement in higher education in NZ was then the focus, and the use of the SEQ, a key component of the TISEQ instrument used in this study, was presented.

The chapter then focused on conceptualising students' cultural background, achievement and engagement and then studies involving these variables were presented. The literature review revealed that a number of studies have been conducted in the areas of learning environments research in secondary schools, with limited research in blended learning in tertiary contexts like the one in this study. Research into the evaluation of the impact of blended learning on student achievement and engagement in higher education is also fairly limited, and research on the intersection of these with cultural background and gender in the NZ context is also very limited. The next chapter outlines the mixed-method research design utilised in this study. It includes a detailed description of the data collection instruments and activities employed to investigate the blended learning environment, along with the other key variables of this study.

Chapter 3: Methodology

3.1 Introduction

The previous chapter provided a review of the literature and gave an account of the theoretical basis of this study. This chapter presents an overview of the methodology used, justifies the methodological approach, and describes the process and participants in this study. This is followed by a review of the conceptual framework that informed this study, a review of the goal of this study, the main research question and the secondary questions that emanated from the main research question and an explanation of the relationship between the research questions and the data collection methods.

3.2 Method Overview

This study uses a mixed method single case study approach to investigate student perceptions of the blended learning environment to address the research questions. Using both qualitative and quantitative methods in classroom environment research is fairly common practice (Rickards, 1998) in that it allows for looking at the learning environment from a range of methodological perspectives and for triangulation of evidence and methods. In this study, quantitative and qualitative data were gathered from the research sample using a variety of methods: administering the TISEQ, focus group interviews and achievement scores. Data were gathered over three years. The TISEQ was administered first during the first semester of study for certificate (semester-long duration), diploma (one-year duration), graduate diploma (one-year duration) and degree students (three-year duration). Quantitative data were analysed using a combination of MS Excel and Jeffrey's Amazing Statistics Program (JASP), an open-source (GPL) software developed at the University of Amsterdam. Qualitative data were analysed using a combination of MS Excel and NVivo 12.

3.3 Method Rationale

As stated previously, this study uses a mixed method (Tashakkori & Teddlie, 2003) single case study approach. A mixed-method research design is a procedure for collecting, analysing and 'mixing' both qualitative and quantitative research and methods in a single study to understand a research problem more completely (Creswell & Creswell, 2022).

One of the justifications for using both methods in this study is that neither quantitative nor qualitative methods are sufficient to encapsulate the many issues the research questions aim to answer. When combined, qualitative and quantitative methods complement each other and allow for a more complete analysis (Greene et al., 1989; Tashakorri & Teddlie, 1998).

In quantitative research, historically, there are three main emphases (Creswell & Creswell, 2022). First, there is an emphasis on collecting and analysing information in the form of numbers. Second, there is an emphasis on collecting scores that measure distinct attributes of individuals and organisations. Third, there is an emphasis on procedures of comparing groups or relating factors about individuals or groups in experiments, correlational studies and surveys. This study gathered and analysed numerical data, collected scores relating to attributes of individuals within a given context—the blended learning environment—and then compared groups by gender and cultural background in relation to achievement and engagement using a survey instrument.

In qualitative research, historically, there are three main characteristics (Creswell, 2022). First, there is a recognition that, as researchers, we need to listen to the views of participants in studies. Second, it is recognised that researchers need to ask general, open questions and collect data in places where people live and work. Third, there is a recognition that research has a part to play in advocating for change and improving the lives of individuals. The researcher develops a 'complex, holistic picture, analyses words, reports detailed views of informants, and conducts the study in a natural setting' (Creswell, 1998, p. 15). This study is characteristically qualitative in that it gathered and analysed the views of participants in a natural everyday setting, in this case, the blended learning environment; this study has a participatory rationale (Mertens, 2003), as it advocates for change.

Cohen et al. (2022) noted that mixed methods research recognises that:

> The world is not exclusively quantitative or qualitative; it is not an either/or world, but a mixed world, even though the researcher may find that the research has a predominant disposition to or requirement for numbers or qualitative data. … MMR [mixed-methods research] encourages us not only to look at the world in different ways but to share

> those multiple different views in making sense of the world discussing our views and values in it. (p. 31)

Consequently, mixed-methods research is not only about data collection methods; it reaches much further into the way the world is viewed, ontologies, epistemologies and axiologies (Cohen et al., 2022). In a mixed-methods approach, as used in this study, the researcher chooses approaches and units of analysis that are most appropriate for finding answers to their research questions (Tashakorri & Teddlie, 1998). Both numerical and text data have been collected in this study concurrently and sequentially to answer the research questions.

When designing a mixed-methods study, three issues need consideration: priority, implementation and integration (Creswell & Creswell, 2022; Guttman & Hanson, 2003; Ivankova, 2002). Priority refers to which method, either quantitative or qualitative, is given more weight in the study. Implementation refers to whether the quantitative and qualitative data collection and analysis come in sequence, one following another, or concurrently. Integration refers to the phase in the research process where the mixing or connecting of quantitative and qualitative data occurs.

The priority in the research design used in this study is the quantitative method, since the quantitative research represented the major element of this study with a smaller explanatory role of the qualitative methods. In terms of implementation, the order is largely sequential, with the qualitative data gathering following the quantitative data gathering. The quantitative and qualitative methods were integrated at the beginning of the qualitative phase in selecting the students for the focus group interviews. The results of the two phases are also integrated into presenting the outcomes of the study.

This study used concurrent and sequential explanatory mixed-methods design with two distinct phases (Creswell & Creswell, 2022; Hirose & Creswell, 2022). In the first phase, quantitative, numeric data were collected using Parts 1–4 of the TISEQ. These data were subjected to statistical analysis using MS Excel and JASP. The TISEQ also had a set of open-ended questions that gathered textual data in Part 5 simultaneously with the numeric data collection. The qualitative data gathered in this part of the TISEQ were used to allow for purposefully selecting participants for the second phase of the study. In the second phase, data were gathered from selected participants using focus group interviews.

Creswell and Creswell (2022) identified four types of mixed-method designs. Triangulation design is where two sets of data are gathered and analysed separately and then compared, and the researcher then makes a judgement as to whether the results support or contradict each other. Embedded design is where qualitative and quantitative data are collected simultaneously, and one form of data supports the other form of data. Explanatory design is where quantitative and qualitative data are gathered sequentially in two phases: quantitative data are gathered first, and then qualitative data are gathered to expand or elaborate on the results. An exploratory design is where qualitative data are gathered first to explore a phenomenon, then quantitative data are gathered to explain relationships found in the qualitative data. This study is based on an explanatory mixed-method design. There is one difference, though, since quantitative and qualitative data were gathered simultaneously using a survey instrument, with the qualitative data representing one-fifth of the survey to guide the next stage of deep qualitative data gathering (Cohen et al., 2022). The rationale for this approach was that the quantitative data and results provided a general response to the research questions, while the qualitative data and its analysis were used to refine and explain the statistical results by exploring participants' views in greater detail.

3.4 Case Study Research

Case study research enables the understanding of a complex issue and can add value to what is already known from previous research (Yin, 1984). Yin defined the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context when the boundaries between phenomenon and context are not clearly evident and in which multiple sources of evidence are used (Yin, 1984, p. 23). This study examines the context of the blended learning environment and the interactions between students and teachers in that environment using multiple sources of evidence. Cohen et al., (2022) argued that case study research allows the researcher to examine the characteristics of an individual unit with the purpose of probing deeply and analysing intensively the many phenomena within the unit to be able to establish generalisations to which that unit belongs. While this study probes deeply into the blended learning environment, it does not aim to establish generalisations. Instead, its methodological position is in line with Freebody (2003) in that case studies focus on one particular instance of an education experience with a view to gaining theoretical and professional

insights from complete documentation of that instance and Stenhouse's (1985) notion of the evaluative case study. Stenhouse (1985) presented the view that a single case is studied in depth with the purpose of providing educational decision-makers (such as administrators, teachers and students) with information that will help them judge the merit and worth of policies or programs. This research study is focused on an in-depth analysis of student–teacher interaction and student achievement and engagement in a blended learning environment in an NZ ITP, providing information to assist decision-makers in the development of institute-wide blended learning financial and policy decisions.

3.5 Selection and Description of the Research Sample

This study aimed to examine associations between teacher–student interaction and students' cultural background and student achievement and engagement in blended learning environments within an ITP in NZ. This ITP was selected since the researcher had direct access to students and academic staff in the institution. This ITP is a government-funded institution with 5,501 equivalent full-time students (Annual Report, 2017). It has three campuses in Auckland, namely, Manukau, Otara and Auckland City. This study was conducted in the Manukau and Otara campuses. Both campuses offer a range of certificate, diploma, graduate diploma and degree programs. The study invited participants from all of these programs.

3.6 Sampling Strategy

There are two main methods of sampling (Cohen et al., 2022): probability sampling and non-probability sampling. A probability sample is useful if the researcher wishes to make generalisations in that it seeks representativeness because it draws randomly from the wider population (Cohen et al., 2022). Conversely, A non-probability sample avoids representing the wider population and seeks only to represent a particular group (Cohen et al., 2022). Since this study is based on a particular instance without the aim of generalising, it uses non-probability sampling. Convenience sampling was used to identify certificate, diploma, graduate diploma and degree courses for this study. Students enrolled in these courses were invited to participate to complete the TISEQ and 234 students completed the questionnaire. While 234 students completed the TISEQ, those surveys with blank responses were removed from the sample. Consequently, 190 completed surveys were analysed. Of the completed surveys, 85 (44 %) respondents were

male, 104 (55%) were female, and one did not indicate gender. Based on their responses to the TISEQ, focus group interviews were conducted with a selected sample of learners to triangulate data and answer the research questions.

3.7 Research Questions

This research aims to investigate students' perceptions of student–teacher interactions and engagement and their impact on student achievement in a blended learning environment. The specific research questions that guided this study are as follows.

Main question:

- How does student–teacher interaction and student engagement affect student achievement in a blended learning environment?

The sub-questions are: In a blended learning environment:

1. How does student–teacher interaction affect student achievement?
2. How does student engagement affect student achievement?
3. How does student gender affect student–teacher interaction?
4. How does student gender affect student engagement?
5. How does cultural background affect student–teacher interaction?
6. How does cultural background affect student engagement?

Several data collection methods were used to address these research questions. The aim was to ensure that necessary and sufficient amounts of data were gathered in relation to each of the variables in the research questions. In the following section, the data collection method used is presented, showing how each method is linked to the variables in the research questions.

3.8 Data Collection Methods

This study used mainly two research methods to collect data to answer the research questions. The first data collection method was a five-part questionnaire, followed by focus group interviews. Data from students' achievement scores were also gathered. Each of these is now detailed.

3.9 The Teacher Interaction and Student Engagement Questionnaire

This questionnaire was constructed in five parts. Part 1 gathered data on student demographic details and their cultural background. This study aimed to investigate whether there was an association between students' cultural background on the one hand and students' achievement and engagement on the other in blended learning environments. Identifying students' cultural backgrounds in an effective and efficient manner is fraught with difficulty (Hall & Hall, 1996). For the purposes of this study, adopting Rickards' (1998) method, students' cultural background was indicated by the birthplace of each of their parents, the primary language spoken at home and the culture they identified with. In so doing, students self-designated cultural group membership, and these variables served as indicators of cultural background.

Part 2 of the questionnaire was an adapted version of the Australian 48-item QTI. The response provision in the QTI is a five-point Likert-type scale, which is scored from 0 (*never*) to 4 (*always*) on the questionnaire. There was one change in language that made it more meaningful in this study. The word 'classroom' was replaced with the word 'course' since this study was focused on both the face-to-face classroom and the online/virtual classroom in blended learning environments (see Appendix A). As discussed in Chapter 2, the QTI has the following scales with each scale having six items: Leadership, Helpful/Friendly, Understanding, Student Responsibility/Freedom, Uncertain, Dissatisfied, Admonishing and Strict. Therefore, the highest score for each scale is 24 and this was taken into account in analysing the mean scores and the sum of the mean scores for each scale for the sample. All of these scales were used in this study. The QTI was chosen since its validity and reliability were established previously (Fisher, 1992) and since it focused on key variables in this study, namely, lecturer–student interaction.

Parts 3 and 4 of the questionnaire were an adaptation of the AUSSE. This survey has been conducted annually in NZ and Australia from 2007–2010, and responses have been collected from around 120,000 students (Australian Council for Educational Research [ACER], 2010). The AUSSE uses the Student Engagement Questionnaire (SEQ), which measures student engagement. Student engagement is defined as 'students' involvement with activities and conditions that are likely to generate high-quality learning' (ACER, 2010, p. 2). This study supported this definition, and the SEQ was used to collect student

engagement data. It was appropriate since lecturer–student interaction and student engagement were identified variables in this study. The SEQ has six scales, outlined in Table 3.1.

Table 3.1: SEQ Scales and Description

Engagement Scale	Number of Items	Description
Academic Challenge	11	Extent to which expectations and assessments challenge students to learn
Active Learning	7	Students' efforts to actively construct their knowledge
Student and Staff Interactions	6	Level and nature of students' contact with teaching staff
Enriching Educational Experiences	12	Participation in broadening educational activities
Supportive Learning Environment	6	Feelings of legitimation in an institution's learning community
Work Integrated Learning	6	Integration of employment-focused work experience and study

Source: ACER Report (2010).

For the purposes of this study, only items from four of the six scales were used, namely, Academic Challenge, Active Learning, Student and Staff Interactions and Enriching Educational Experiences. Each of these four scales has a different number of items, as shown in Table 3.1. Therefore, the highest score for each scale is variable and this was taken into account in analysing the mean scores and sum of the mean scores for each scale for the sample. These four scales were appropriate since they are similarly constructed to the items in the QTI and use a 5-point Likert scale, 0-4 (See Appendix A). The Student and Staff Interactions scale was used, even though some items were similar to the QTI, to assist with internal consistency. The Supportive Learning Environment scale and the Work-Integrated Learning scale items, since they address issues outside the scope of this study, were excluded.

Part 5 asked participants to respond to six open-ended questions. Three questions were based on their preferences for study in the face-to-face and online learning environments in relation to their engagement and achievement. These questions were asked to ensure that data were gathered to answer the research questions in this study more fully and to provide the opportunity to select participants for the focus group interviews. Two

questions were based on teacher interaction and participant engagement and achievement. These questions were also asked to ensure that data were gathered to answer the research questions in this study more fully.

3.10 Focus Group Interviews

Based on their responses to the TISEQ, students were selected to participate in focus group interviews. These semi-structured interviews were constructed around key themes that addressed the research questions. Focus groups can be used to collect shared understanding from several individuals and to obtain views from specific people (Creswell and Creswell, 2022). Cohen et al. (2022) identified several research situations in which focus groups are useful. In this study, focus groups were useful for generating and evaluating data from several subgroups of a population, empowering participants to speak out in their own words, providing greater coverage of issues than would be possible in a survey and gathering data on attitudes, values and opinions (Cohen et al., 2022). Three focus group interviews were conducted based on the following themes: lecturer–student interaction and student achievement, lecturer–student interaction and student engagement, cultural background and student achievement, cultural background and student engagement, and students' preferred delivery options.

3.10.1 Attendance Records

Academic teaching staff are required to maintain attendance records for all courses taught using the Student Management System. These records were used to measure student engagement and student achievement. It has been argued that a relationship exists between attendance and student achievement (Eisen et al., 2015; Hattie, 2012; Kirby & McElroy, 2003). In their study that examined the relationship between class attendance and student performance, Lukkarinen et al. (2016) concluded that attendance is a 'significant predictor of performance' (p. 346). Although attendance was not a key variable in this study, attendance data were gathered since they were readily available to establish whether there was a correlation between attendance, engagement and achievement.

3.11 Student Achievement Records

Participants' final course results were used to answer research questions one and three. In conducting this study, student attendance records were accessed following stringent ethical guidelines to ensure the protection of participants' rights and privacy. Prior to data collection, approval was obtained from the Institute and students provided consent by completing a consent form.

To maintain confidentiality, all records were anonymised, with identifiable information replaced by unique codes. Data was securely stored on encrypted devices, and access was restricted to authorized personnel who signed confidentiality agreements. The study received approval from the Institute and compliance with ethical standards was maintained throughout the research process. The research objectives and methods were clearly communicated to all stakeholders and the findings were reported transparently. By adhering to these ethical principles, potential harm was minimised, and the integrity of the research was ensured.

The associations between achievement, student engagement and cultural background are detailed in the chapters that follow.

3.12 Data Analysis

This study gathered quantitative data using parts 1- 4 of the TISEQ and qualitative data using open-ended questions in part 5 of the TISEQ and focus group interviews. The next section will explain how the quantitative data was analysed and thereafter an explanation of the qualitative data analysis will be presented.

3.12.1 Quantitative data analysis

Quantitative data were prepared for analysis by first cleaning data by addressing missing values through deletion. Thereafter categorical data were converted to numerical codes to facilitate analysis. Further analysis was then undertaken using a using a combination of MS Excel and JASP (Jeffreys's Amazing Statistics Program), an open-source statistical software package designed to facilitate both classical and Bayesian statistical analysis (JASP Team, 2020). Descriptive statistical methods were used to summarise the data showing measures of central tendency, measures of dispersion and frequency

distributions. Inferential statistics methods were used in the form of T-tests, ANOVA, MANOVA, correlation analysis and regression analysis. In interpreting results, significance levels were computed using p values and confidence levels to determine statistical significance followed by analysis of effect sizes to assess the practical significance of findings beyond statistical significance and effect sizes (van Doorn et al., 2020) . Data analysis was undertaken using a combination of MS Excel and JASP, an open-source (GPL) software developed at the University of Amsterdam. The QTI and SEQ scales were analysed for reliability and validity using Cronbach's alpha reliability coefficient and discriminant validity and internal reliability of the scales. Comparative analysis of variables of interest with the QTI and SEQ scales was also conducted.

3.12.2 Qualitative data analysis

Thematic analysis was used to identify, analyse and report patterns (themes). This was done using a combination of NVivo 12 and MS Excel.

The first step in the process was creating Word files for each student's handwritten responses to the open-ended questions of the TISEQ. These files were imported into NVivo 12 and were organised into cases. Nodes were created and data segments were coded and dragged and dropped into nodes. These nodes were refined into themes and sub-themes for reporting.

Data in each node was exported into MS Excel. Using Excel's sort and filter function data was sorted into themes using data similar data segments in student responses and numbering these, thereby creating clusters of responses for reporting.

Focus group interviews were recorded and transcribed using Otter ai. These transcribed interviews were checked for accuracy and then imported into NVivo 12 for thematic analysis using the same process that was used for the open-ended questions of the TISEQ.

Table 3.2 shows a summary of the phases of the study, the research questions, data sources and data analysis methods.

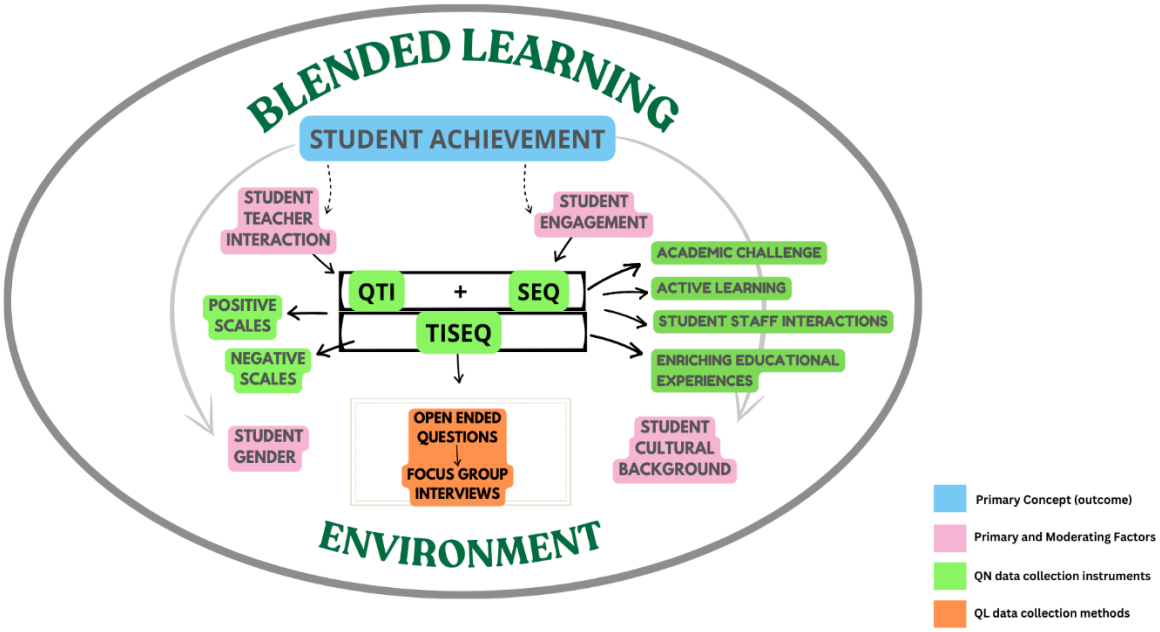
Table 3.2: Phases, Research Questions, Sources of Data, and Data Analysis Methods

Phase	Research Questions	Sources of Data	Data Analysis Methods
Questionnaire Design	Main Question: How does student–teacher interaction and student engagement affect student achievement in a blended learning environment?	TISEQ (Parts 2-4)	Descriptive statistics Cronbach's alpha reliability coefficient Discriminant validity Internal reliability of scales Comparative analysis
Data Collection	Sub-question 1: How does student–teacher interaction affect student achievement?	TISEQ (Part 2) Student Achievement Records	Correlation analysis Comparative analysis
	Sub-question 2: How does student engagement affect student achievement?	TISEQ (Part 3 and 4) Student Achievement Records	Correlation analysis Comparative analysis
	Sub-question 3: How does student gender affect student–teacher interaction?	TISEQ (Part 1) Student demographic details	Descriptive statistics Comparative analysis
	Sub-question 4: How does student gender affect student engagement?	TISEQ (Part 3 and 4) Student demographic details	Descriptive statistics Comparative analysis
	Sub-question 5: How does cultural background affect student–teacher interaction?	TISEQ (Parts 2-4) Student demographic details and cultural background	Descriptive statistics Comparative analysis
	Sub-question 6: How does cultural background affect student engagement?	TISEQ (Part 3 and 4) Student demographic details	Descriptive statistics Comparative analysis
Focus Group Interviews	Main Question and all sub-questions	TISEQ (Part 5) Focus Group Interview responses	Qualitative analysis using NVivo 12 MS Excel
Data Analysis	All Research Questions	Data from Questionnaires Focus Group Interviews Student Achievement Records	MS Excel and JASP for quantitative data NVivo 12 for qualitative data Descriptive statistics Correlation analysis Comparative analysis
Reporting Findings	All Research Questions	Compiled data from all sources	Reporting of results ensuring confidentiality and anonymity

3.13 Research Framework

The research framework guiding this study, is presented visually in the diagram (Figure 3.1). This framework serves as a conceptual map, outlining the key components, relationships, and processes central to the research objectives. It synthesizes the theoretical underpinnings, variables, and methodological approaches that shape the study, providing a structured approach to exploring student achievement, student-teacher interaction, student engagement, student gender and student cultural background in the blended learning environment. It also shows the research instruments and qualitative methods used in this study.

Figure 3.1: Research Framework of this study



3.14 Ethical Issues

All participants were given a participant information sheet which outlined, among other things, the purpose of the study and study procedures, that their involvement in the research was entirely voluntary, that they would have the right to withdraw at any stage and that if they chose not to take part in this study, it would have no impact on their academic studies. Since some of the participants were from the researcher's own

institution, the power relations needed to be recognised and their effects ameliorated from the study, following the guidelines of the National Statement on Ethical Conduct in Human Research (2007) as it applies to people in dependent or unequal relationships. All participants were assured of confidentiality and anonymity. This was guaranteed to all students and lecturers as data were coded as alphanumeric values to remove identifying features from the data during preparation and entry. No student or lecturer was identified in the study or the reporting of the study. The data gathered were treated with strict confidentiality and privacy was ensured. Access was only available to the researcher and his PhD supervisor.

The Academic Director responsible for research within the ITP was the first point of contact, after which the deans of the faculties were contacted to provide informed consent prior to any research being undertaken within the institution. Ethics approval was also sought and obtained from Curtin University for the duration of this study.

3.15 Chapter Summary

This chapter has provided an account of the research methodology used to complete this study and has justified using a mixed-method explanatory case study design using both qualitative and quantitative research methods. An account of the selection and description of the research sample and the sampling strategy used was presented. The research questions that guided this study were reviewed and the data gathering methods used were described with a justification for using each method. An account of how the quantitative and qualitative data were analysed was presented. Finally, the ethical issues relating to this study were addressed. The following chapter present the findings of this study of this study.

Chapter 4: Findings

4.1 Introduction

The previous chapter discussed and described the methodology used in this study. An account of the research questions that informed this study was provided, and other methodological concerns were addressed. This chapter presents the findings of the study. This study involved a two-phase project in which quantitative and qualitative data using the TISEQ were collected. This survey instrument combined the QTI and SEQ to gather quantitative data (closed items). Six open-ended questions were further included to gather qualitative data as a part of the first phase. The results were analysed and used to inform the second qualitative phase of the research, which comprised three student focus group interviews. This chapter presents the findings from the TISEQ (see Appendix A) and the findings from the focus group discussions with students. The survey was administered to 419 students, of which 190 (45%) fully completed surveys were analysed. The survey results informed the purposive sampling of the participants for the second phase of the research, namely, the three focus group discussions with students. The results from the survey also helped determine the nature of the questions asked of participants in the focus group discussions.

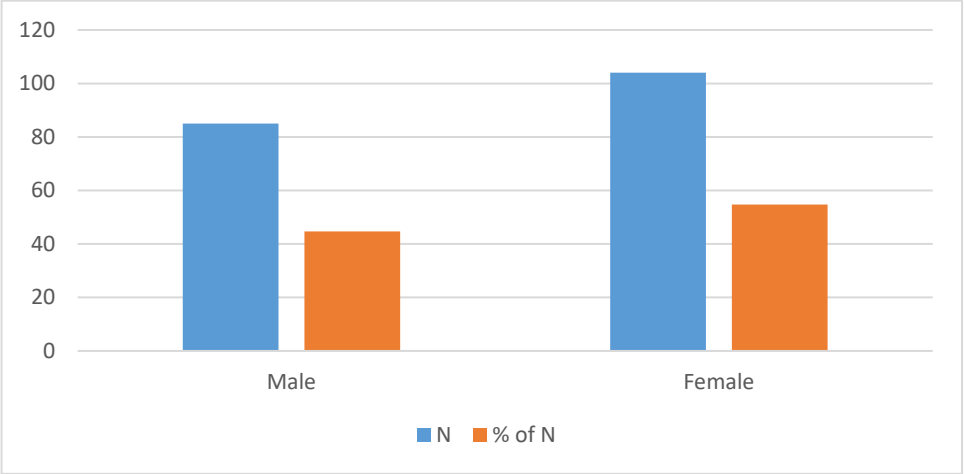
The chapter begins with a description of the sample demographics. Thereafter, the quantitative data results are presented in line with the structure of the TISEQ. Teacher interaction data gathered using the scales of the QTI are presented first followed by the results of the SEQ. After that, the qualitative data gathered from the final part of the TISEQ are presented. This is followed by the results from the focus group discussions, and the results from the teacher interviews are presented.

4.2 Demographic Description of the Sample (Part 1 of the TISEQ)

4.2.1 Gender Breakdown of the Sample

The sample consisted of 190 students. Figure 4.1 shows the gender distribution of the sample. This split between males and females is similar to the general student population of the Institute, 43% male and 57% female (Institution Annual Report, 2017).

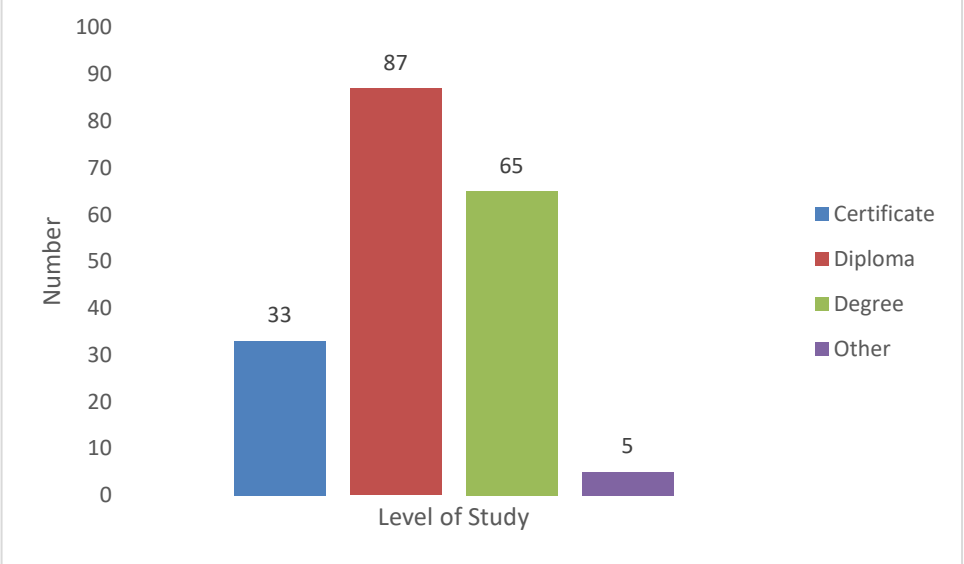
Fig.4.1: Gender Breakdown of the sample



4.2.2 Breakdown Showing the Level of Study of Students in the sample

Students were asked to indicate what level of study they were engaged in, namely, certificate, diploma, degree or other. Figure 4.2 shows the distribution across the levels of study. Again, this split between programs is representative of the general student population with the majority of students completing diploma qualifications.

Fig.4.2: Breakdown Showing Students' Level of Study

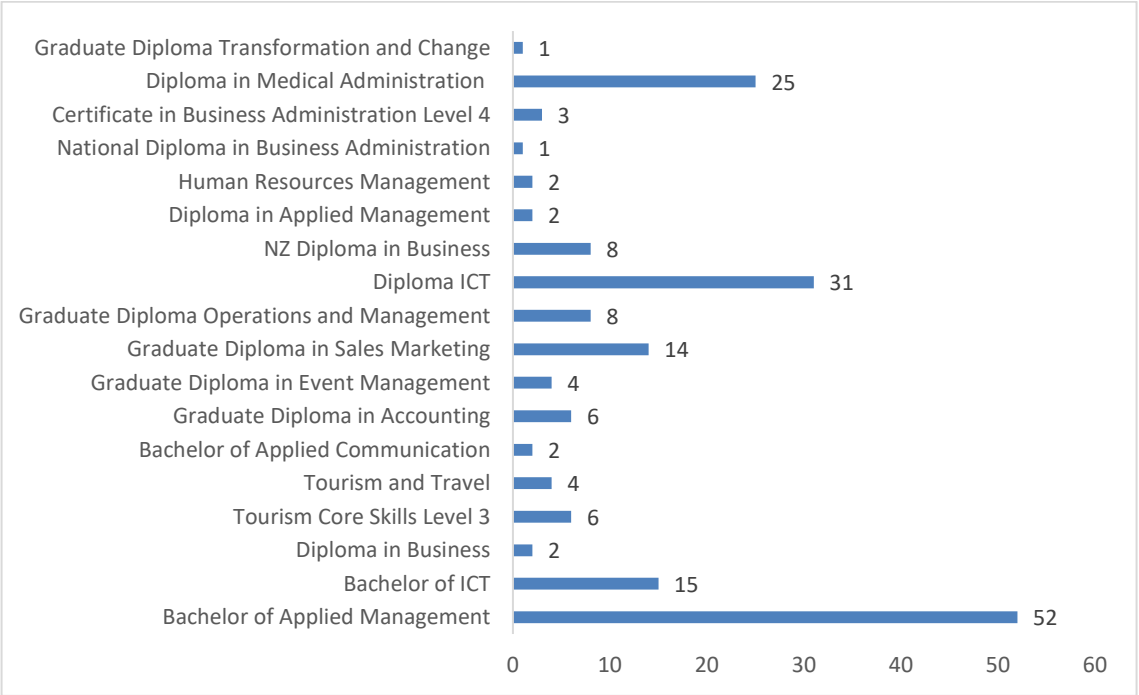


4.2.3 Breakdown of Qualification Being Studied

Students were asked to indicate the qualification they were studying. Figure 4.3 shows the breakdown of their responses. These data show the spread from which the sample was

drawn to reflect the range of qualifications and the level at which students were studying, which is representative of the institution's general population. Other demographic data were gathered relating to students' cultural backgrounds. Since cultural background is a key variable in this study, these results are presented in the relevant section later in this chapter. The next section presents validation and descriptive information for the QTI.

Fig.4.3: Breakdown Showing Qualifications being Studied



4.3 Internal Consistency and Descriptive Information for the Questionnaire on Teacher Interaction

This section presents the results of statistics from the 48-item QTI, which formed Part 2 of the TISEQ. The results further validate the instrument when used in a tertiary education setting in South Auckland, NZ. In keeping with previous studies in which the QTI was administered to groups of respondents in secondary and tertiary settings (Aldridge & Fraser, 2010; Coll et al., 2001; D. Henderson et al., 2000; Lang et al., 2005; Lee et al., 2005; Passini et al., 2015; Rickards, 1998; Sun et al., 2018; Tsigilis et al., 2021), Table 4.1 provides scale reliability information for the QTI used in this sample. Cronbach's alpha reliability coefficient (Cronbach, 1951) was used to establish whether the QTI's scales are reliable, that is, the degree to which the items in the same scale measure the same aspect of interpersonal behaviour. The highest alpha reliability was obtained for the

scales Leadership (0.89) and Understanding (0.85) and the lowest for Student Responsibility/Freedom (0.51). These findings are similar to Madu (2010). Table 4.4 shows the alpha reliability figures for different QTI scales ranging from 0.51 to 0.89. With the exception of Student Responsibility/Freedom (0.51), all of the other scales showed good internal consistency (DeVellis, 2016), similar to previous studies.

Table 4.1: Means, Standard Deviation and Internal Consistency (Cronbach's Alpha Coefficient) for the Scales of QTI

Scale	No. of Items	Mean for sample	Std. Deviation	Alpha Reliability
Leadership (DC)	6	20.27	4.13	0.89
Helping/Friendly (CD)	6	20.05	4.06	0.83
Understanding (CS)	6	20.13	3.97	0.85
Student Responsibility/Freedom (SC)	6	11.32	3.76	0.51
Uncertain (SO)	6	4.61	4.04	0.75
Dissatisfied (OS)	6	4.18	4.20	0.81
Admonishing (OD)	6	4.73	4.15	0.73
Strict (DO)	6	9.42	4.53	0.67

Note: Sample size: n=190

The mean scores presented in Table 4.4 will be discussed first. The high mean for the leadership scale for all students in the sample, irrespective of gender and cultural background, shows that students perceive their teachers as showing good leadership within their learning environment. This could likely mean that teachers are seen as effective leaders who guide support and inspire students to achieve. Similarly, the high mean scores for Helping/Friendly (20.05) and Understanding (20.13) suggest that the students perceive their teachers as supportive and friendly showing that they are approachable and willing to assist students in their learning. The high mean for the Understanding scale suggests that teachers are perceived as empathetic and responsive to students' needs and concerns. This is likely to have the effect of making students comfortable to engage actively in the learning process. The moderate mean for the Student Responsibility/Freedom scale (11.32) suggests a balanced level of autonomy granted to students. It could mean that while students perceive some level of freedom and responsibility in the blended learning environment, it is not extensive. This could mean

that the students perceive their teachers as providing enough structure to maintain order, and minimising disruptions, while allowing some degree of autonomy and freedom.

The mean scores for the negative scales are considerably lower. The low Uncertain (4.61) scale mean suggests that teachers are perceived as confident and clear in their communication and in providing directions for learning activities. The low mean score for the Dissatisfied (4.18) scale suggests that students are generally satisfied with their learning environment. Low dissatisfaction is a strong indication that students have positive perceptions of their learning environment. The low mean score for Admonishing (4.73) indicates that negative feedback or punitive measures are not prevalent which suggests that the teaching approach is more constructive favouring positive reinforcement rather than criticism. The moderate mean score for the Strict (9.42) scale implies that while there are rules and expectations, they are not overly restrictive. This balanced level of strictness is likely to be conducive for learning since it provides necessary structure without stifling creativity and freedom.

In summary, high mean scores in the positive behaviour scales such as Leadership, Helping/Friendly, and Understanding reflect a strong, supportive, and engaging learning environment. These positive behaviours are crucial for student success and satisfaction. Conversely, low mean scores in negative behaviour scales like Uncertain, Dissatisfied, and Admonishing indicate that negative aspects are minimal, further reinforcing the overall positive climate.

Moderate scores in Student Responsibility/Freedom and Strict behaviours suggest a balanced approach, providing enough structure to maintain order while allowing some degree of autonomy and freedom. These insights can help teachers and administrators identify strengths and areas for improvement, aiming to enhance the effectiveness of blended learning environments.

As shown in Table 4.1, the reliability results were consistent for all the scales of the QTI, excluding the Student Responsibility/Freedom scale. Alpha Cronbach has been used as a measure of reliability and values determining measures of reliability have been proposed. For educational studies, the following guidelines are commonly cited:

- $\alpha > 0.9$ – Excellent
- $\alpha > 0.8$ – Good
- $\alpha > 0.7$ – Acceptable

- $\alpha > 0.6$ – Questionable
- $\alpha > 0.5$ – Poor
- $\alpha < 0.5$ – Unacceptable

(DeVellis, 2016; George & Mallery, 2003; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011).

While this study did not aim to validate the QTI, excluding the Student Responsibility/Freedom scale, this result shows that the QTI is valid with values indicating acceptable and above, for this sample. These are some suggested reasons for the low Cronbach alpha score for the Student Responsibility/Freedom scale. This scale encompasses various aspects of student behaviour and perception, making it challenging to capture with a single, unified scale, similar to Fisher, Fraser and Creswell (1995). Given the culturally diverse nature of the sample including their different language proficiency, cultural differences can play a role. In cross-cultural studies, it has been observed that students' perceptions of responsibility and freedom can vary widely, which may result in a lower Cronbach's alpha. For instance, what constitutes "freedom" in one culture might not be perceived the same way in another, affecting the reliability of the scale. Aldridge and Fraser (2000), in their cross-cultural study, found the Student Responsibility and Freedom scale showed a Cronbach's alpha of approximately 0.65 in the Australian sample and 0.60 in the Taiwanese sample, which were lower than other scales in their study. Students might interpret items related to responsibility and freedom differently based on their personal experiences and educational backgrounds. This variance in interpretation can lead to inconsistent responses across the scale items, lowering the overall reliability as also observed by Dorman (2002). Dorman (2002) reported that the Student Responsibility and Freedom scale had a Cronbach's alpha of 0.58, which was lower compared to other scales. Finally, measuring abstract concepts like responsibility and freedom can be inherently difficult. These scales might require more refined or diverse items to capture the construct accurately, and current items may not be sufficient to cover all dimensions, leading to lower reliability scores.

Further analysis was carried out to explore the interscale correlations between the different scales of the QTI based on a two-dimensional circumplex model of interpersonal behaviour (Wubbels & Levy, 1993). Table 4.2 reports interscale correlations from this study as another measure of the validity of the circumplex nature of the QTI.

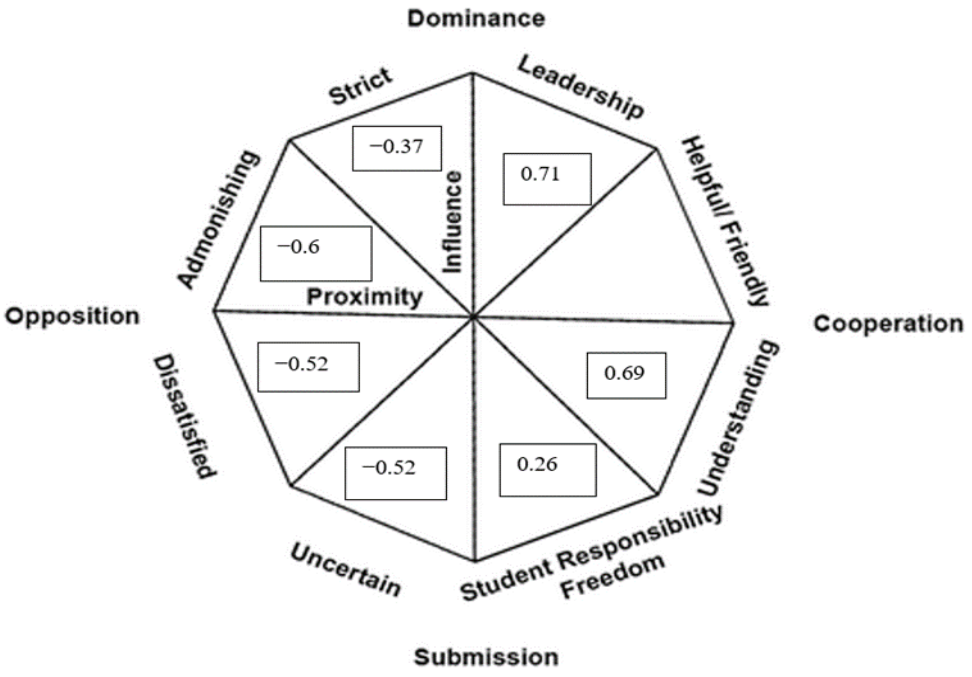
Table 4.2: Interscale Correlations for the scales of QTI

Variable	DC	CD	CS	SC	SO	OS	OD	DO
Leadership DC	1.00							
Helping/Friendly CD	0.71***	1.00						
Understanding CS	0.78***	0.69***	1.00					
Student Resp/ Freedom SC	0.02	0.26***	0.087	1.00				
Uncertain SO	0.68***	0.52***	0.58***	0.15*	1.00			
Dissatisfied OS	0.63***	0.52***	0.68***	0.08	0.75***	1.00		
Admonishing OD	0.58***	0.6***	0.58***	0.00	0.62***	0.71***	1.00	
Strict DO	0.26***	0.37***	0.33***	0.25***	0.38***	0.49***	0.53***	100

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

According to the Leary model (1957), which underpins the QTI, the eight scales can be arranged in a two-dimensional circular arrangement (Coll et al., 2002). The circumplex nature of the model is supported if the interscale correlations are highest between adjacent scales and lowest or negatively correlated with scales that are opposite (Rickards, 1998). For example, the scale of Helping/Friendly is correlated closely and positively with Leadership (0.71) and Understanding (0.78), and this correlation decreases with the other scales until it reaches the highest negative correlation of −0.68 for Uncertain and −0.63 for Dissatisfied. Figure 4.4 confirms the assumptions of the circumplex model of the QTI based on the Helping/Friendly scale's correlations with its adjacent and opposite scales. This pattern generally reflects the circumplex nature of the QTI and thus further confirms the validity of the QTI for use in tertiary blended learning environments in NZ.

Figure 4.4: Interscale Correlations of the Questionnaire on Teacher Interactions



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4.4 Reliability of the Student Engagement Questionnaire

The SEQ, derived from the AUSSE used in the study, has four scales, as shown in Table 4.3. Cronbach's alpha test was used to establish the reliability of the four scales of the SEQ, and Table 4.4 shows the results. For all scales, the alpha values are above 0.70, which is acceptable (DeVellis, 2016; George & Mallery, 2003; Nunnally & Bernstein, 1994; Tavakol & Dennick, 2011). This indicates that the questionnaire applied to this sample of students in a tertiary educational context in NZ has acceptable reliability.

Table 4.3: Student Engagement Questionnaire Scales Derived From the AUSSE

Engagement Scale	Description
Academic Challenge (AC)	Extent to which expectations and assessments challenge students to learn
Active Learning (AL)	Students' efforts to actively construct their knowledge
Student and Staff Interactions (SSI)	Level and nature of students' contact with teaching staff
Enriching Educational Experiences (EEE)	Participation in broadening educational activities

Table 4.4: Means, Standard Deviation and Alpha Reliability for the Scales of SEQ

Scale	No. of Items	Mean for sample	Std. Deviation	Alpha Reliability
Academic Challenge (AC)	11	22.72	5.53	0.72
Active Learning (AL)	6	12.74	5.29	0.72
Student and Staff Interactions (SSI)	5	6.88	4.45	0.76
Enriching Educational Experiences (EEE)	7	11.46	3.315	0.72

Note: sample size n=190

The mean scores for each of the scales shown in Table 4.4 provide insights into the dimensions of student engagement within the blended learning environment. The moderate mean score for Academic Challenge (22.72) means that students perceive the academic rigour of their courses to be demanding but achievable. The mean score of 12.74 for Active Learning indicates a moderate level of engagement in active learning practices. Active learning involves students actively participating in their education through discussions, problem-solving, and collaborative projects. This moderate score suggests that while some active learning techniques are being implemented, there might be room for further increasing student engagement through more interactive and participatory teaching methods. This finding was further validated in the open-ended questions where students were requesting more active teacher intervention in the online environment. The mean score of 6.88 for Student and Staff Interactions is relatively low, suggesting limited interactions between students and staff. This could indicate that in the students' perception, they are not receiving sufficient support and mentorship from their teachers outside of the classroom. Enhancing these interactions can lead to better student support, personalized feedback, and a stronger sense of community, which are critical for student engagement and success. This finding was also validated by student responses to the open-ended questions and the focus group interviews with students stating that their teachers needed to be more present and engage them in discussions, especially in the online environment. The mean score of 11.46 for Enriching Educational Experiences suggests that students are somewhat involved in activities that enhance their educational experience beyond the standard curriculum. These experiences could include extracurricular activities, and internships, particularly for degree students. While the score

indicates some level of engagement in these enriching activities, there is potential to increase participation to further enhance the overall educational experience.

4.5 Student Outcome Variables and Other Measures

The previous section presented instrument reliability and descriptive information for the QTI and SEQ, as used in this study. This section presents data describing gender differences in relation to teacher interaction and gender differences in relation to student engagement. Thereafter, results relating to cultural background and teacher interaction and cultural background in relation to student engagement are reported. Finally, results relating to teacher interaction and student achievement, and student engagement and student achievement are reported.

4.5.1 Gender Differences and Student–Teacher Interaction

Responses from male and female students in the sample were analysed using the mean scores for the scales of the QTI. The standard deviation, *t*, *p* and Cohen's *d* were also calculated, as shown in Table 4.5.

Table 4.5: Item Mean and Standard Deviation for Gender Differences in Students' Perceptions on the scales of Questionnaire on Teacher–Student Interactions (QTI)

Scales	Item Mean		Item SD		Mean difference (M-F)	*t*	*p*	Cohen's d (Effect size)
	Male	Female	Male	Female				
QTI Positive Scales								
Leadership (DC)	19.24	21.18	4.80	3.19	1.95	3.33**	0.00	0.49
Helping / Friendly (CD)	18.85	21.03	4.84	3.00	2.18	3.79***	< .001	0.56
Understanding (CS)	19.34	20.77	4.65	3.22	1.43	2.49**	0.01	0.36
Student Responsibility/Freedom (SC)	11.18	11.39	3.08	4.24	-0.22	-0.40	0.69	0.06
QTI Negative Scales								
Uncertain (SO)	5.37	3.90	4.27	3.67	1.46	2.53*	0.01	0.37
Dissatisfied (OS)	5.19	3.30	4.71	3.50	1.89	3.16**	0.00	0.46
Admonishing (OD)	6.08	3.60	4.69	3.20	2.49	4.27***	< .001	0.63
Strict (DO)	10.29	8.72	4.22	4.69	1.57	2.40*	0.02	0.35

*$p<0.05$,**$p<0.01$,$p<0.001$ males (n = 85); females: (n = 104)

From Table 4.5, it is evident by examining the mean scores of male and female students in the sample that male students rated their lecturers significantly lower than their female counterparts for the positive scales of the QTI and significantly higher than their female counterparts for the negative scales of the QTI. The gender differences for all scales, except the Student Responsibility/Freedom scale, are statistically significant. These differences show that females perceive their teachers more positively than males.

Effect size was measured to explore these differences between males and females further. A measure of effect size, the most familiar form being the difference between two means (M_1 and M_2) expressed in units of standard deviations: the formula is $d = (M_1 - M_2)/\sigma$, where σ is the pooled standard deviation of the scores in both groups (J. Cohen, 1988). A value of d below 0.20 is considered small, 0.50 medium and 0.80 large (J. Cohen, 1988). Table 4.8 shows Cohen's d as being small for Student Responsibility/Freedom and medium for the remaining seven scales. These effect sizes, though not large, do confirm that there are educationally significant gender differences in teacher–student interaction. This is further reported on in the analysis of the qualitative data.

4.5.2 Gender Differences and Student Engagement

Responses from male and female students in the sample were analysed using the mean scores for the scales of the SEQ. The standard deviation, t, p and Cohen's d were calculated as shown in Table 4.6.

Table 4.6: Gender Differences in Students' Perceptions of Engagement as Measured by the SEQ

Scales	Item Mean		Item SD		Mean differ-ence (M-F)	t	p	Cohen's d (Effect size)
	Male	Female	Male	Female				
Academic Challenge (AC)	22.09	23.32	5.74	5.27	1.22	-1.53	0.13	-0.22
Active Learning (AL)	12.78	12.77	5.26	5.33	0.01	0.01	0.99	0.00
Student and Staff Interactions (SSI)	7.21	6.61	4.39	4.51	0.61	0.93	0.35	0.14
Enriching Educational Experiences (EEE)	11.28	11.59	2.91	3.63	-0.31	-0.63	0.53	-0.09

Sample: N=189 (Males: n=85; Females: n=104) (* p< 0.05; ** p< 0.01; *** p< 0.001)

Examining the mean scores of male and female students in the sample, Table 4.6 shows that male students rated their lecturers lower than their female counterparts for two of the four scales of the SEQ, namely, Academic Challenge (AC) and Enriching Educational Experiences (EEE). For the scale Active Learning (AL), there was no difference, and for the scale Student and Staff Interactions (SSI), the mean for male students was higher than the mean for female students. In terms of Cohen's *d*, the effect size is small for all the engagement scales.

In summary, none of the differences in mean scores between males and females in the scales (AC, AL, SSI and EEE) are statistically significant at the significance level of 0.05. The effect sizes, while small, suggest minimal practical significance. For the students in this sample, there are no substantial gender differences in the scales of the SEQ.

4.5.3 Cultural Background and Teacher Interaction

As discussed in Chapter 3, students self-identified their cultural background. Based on their responses, six categories of cultural background were identified, namely, Asian (1), New Zealand European (2), Pacific Islander (3), Māori (4), Indian (5) and other (6). Since only five students were in Category 6, this category was removed from the analysis. This procedure is consistent with other studies in learning environment research where small non-representative groups were found within the sample (e.g. Levy et al., 1994; Rickards, 1998). The students' responses from the five categories are now presented.

Table 4.7 shows the means and standard deviations for each of the five categories of cultural background for the positive and negative scales of the QTI. A one-way analysis of variance (ANOVA), shown by the value of F, was performed to compare the effect of cultural background on student perceptions of their teachers' interaction with them.

Table 4.7: Mean and One-Way ANOVA Scores for the QTI Scales for Each of the Five Categories of Cultural Background

Scale	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	*F* Value
	Asian		NZ European		Pasifika		Māori		Indian		
Leadership (DC)	20.2	4.75	18.04	4.96	21.00	3.27	20.07	3.41	21.06	3.52	3.27**
Helping / Friendly (CD)	19.29	4.89	19.17	4.85	21.36	3.32	20.73	3.00	19.89	3.68	2.07
Understanding (CS)	19.98	4.95	19.03	2.84	20.33	3.56	20.64	3.51	21.04	3.88	2.36*

Student Responsibility/Freedom (SC)	11.73	2.90	10.35	4.20	10.79	5.00	11.82	3.37	11.76	3.26	2.50*
Uncertain (SO)	5.49	3.88	5.61	4.73	3.52	3.60	4.09	3.48	4.56	4.14	1.66
Dissatisfied (OS)	4.58	4.21	5.40	6.01	3.00	3.50	4.00	3.69	4.04	3.92	1.80
Admonishing (OD)	5.62	3.83	5.70	5.98	3.10	3.68	3.46	3.30	4.95	3.87	3.21**
Strict (DO)	11.04	4.73	10.65	4.45	8.21	5.14	7.64	2.77	8.82	4.01	3.61**

Asian (n = 45 (23.7%); NZ European (n = 31 (16.3%);Pasifika (n = 39 (20.5%);Māori(n = 19 (10%);Indian (n = 50 (26.3%) (* p< 0.05; ** p< 0.01; *** p< 0.001)

NZ European students in the sample perceived their teachers lowest on the positive scales of the QTI and highest on the negative scales of the QTI when mean scores were compared with the other cultural groups. Indian students in the sample perceived their teachers highest on three of the four scales positive scales of the QTI, and Pasifika students rated their teachers lowest on the negative scales of the sample.

A one-way ANOVA revealed a statistically significant main effect, with a p-value < 0.05 for five of the eight scales of the QTI. These scales were Leadership, Helping/Friendly, Student Responsibility and Freedom on the positive scales and Admonishing and Strict on the negative scales. However, these ANOVA results do not identify which particular differences between pairs of means for the five categories of cultural background are significant. A post-hoc analysis was used to explore the differences between the five groups. Each of the five scales are examined in turn to establish whether there were significant differences between the five categories of cultural background.

Three post-hoc tests were applied to the data using JASP software, namely, the Bonferroni procedure (Haynes, 2013) Scheffé's method (Maxwell & Delaney, 2004) and Tukey's method (Maxwell & Delaney, 2004). Tukey's post-hoc test provided the statistically significant p-value. Tukey's Honestly Significant Difference (HSD) test is a post hoc analysis used to determine which specific group means are different following a significant ANOVA result. The Tukey HSD test controls the family-wise error rate, ensuring that the overall Type I error rate remains at the desired significance level (typically 0.05) across multiple comparisons (Maxwell & Delaney, 2004). The Tukey test showed that the main differences on the leadership scale were between NZ European students and Pasifika students (p = 0.018) and NZ European students and Indian students (p = 0.014). For the Understanding scale, the main difference was between NZ European students and Indian students (p = 0.030). No significant difference existed between any

groups for the Student Responsibility/Freedom scale, with *p* ranging from 0.164 to 1. Results for the two negative scales, which showed statistically significant ANOVA results, are now presented. For the Admonishing scale, there was a difference between the Asian and NZ European students ($p = 0.053$) and NZ European students and Pasifika students ($p = 0.045$) for the Strict scale. In the next section, results for cultural background and student engagement are presented.

4.5.4 Cultural Background and Student Engagement

Table 4.8 shows the means and standard deviations for each of the five categories of cultural background for the four scales of the SEQ. A one-way ANOVA, shown by the value of F, was performed to compare the effect of cultural background on student perceptions of their engagement.

Table 4.8: Mean Scores for the SEQ Scales for Each of the Five Categories of Cultural Background and One-Way ANOVA

Scale	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	*F* Value
	Asian		NZ European		Pasifika		Māori		Indian		
Academic Challenge (AC)	22.62	5.32	23.09	5.58	23.00	4.99	22.55	4.46	23.14	5.90	0.30
Active Learning (AL)	13.33	4.59	12.39	5.55	11.48	5.11	12.18	5.79	14.47	5.79	2.84*
Student and Staff Interactions (SSI)	7.47	3.97	6.62	3.70	5.31	4.43	7.36	3.14	8.11	5.22	3.22**
Enriching Educational Experiences (EEE)	10.80	3.21	12.26	2.47	10.79	10.79	12.91	3.15	11.67	3.38	2.17

Asian (n = 45 (23.7%); NZ European (n = 31 (16.3%); Pasifika (n = 39 (20.5%); Māori (n = 19 (10%); Indian (n = 50 (26.3%)
(* p< 0.05; ** p< 0.01)

Indian students in the sample perceived their engagement highest on three of the four scales: Academic Challenge, Active Learning and Student and Staff Interactions. A one-way ANOVA revealed that there was a statistically significant main effect ($p < 0.05$) for

two of the four scales of the SEQ (Active Learning and Student–Staff Interactions). Three post-hoc tests were used: the Bonferroni procedure, Scheffé's method and Tukey's method. Tukey's post-hoc test provided the statistically significant *p*-value. Tukey's post-hoc test showed that the main differences on the Student–Staff Interaction scale were between Pasifika students and Indian students ($p = 0.017$). In the next section the results relating to teacher interaction and achievement are presented.

4.5.5 Teacher Interaction and Student Achievement

The variable Student Achievement was obtained at two points in the students' study. At the first point, students self-rated their perceived achievement when they completed the survey. This was typically at the half-way point of the course, that is, after week four in an eight-week quarter delivery period or after week eight in a 17-week semester delivery period. The second point was at the end of the course. The students' end-of-course result was obtained from the institution's student management system. Pearson's correlation was computed to assess the linear relationship between the eight scales of the QTI and the self-rated and end-of-course grades. Table 4.9 shows the results.

These results show that for the sample in this study there is no statistically significant relationship between the QTI scales and the course grades. The only statistically significant relationship is between the Understanding scale and the self-rated course grade showing a weak positive linear relationship (0.17). While these results indicate no statistically significant relationship between the scales of the QTI and student achievement scores, the results from the qualitative analysis may reveal practical significance in these relationships. Further analysis of this sample was conducted using regression statistics to identify the effect of the QTI scales on student achievement. Multiple linear regression was used to test if the scales of the QTI assessing teacher interaction significantly predicted student achievement represented by course grade. Table 4.10 shows the results of the regression analysis.

Table 4.9: Pearson's Correlation for the QTI Scales and Course Grades

	Leadership (DC)	Helping / Friendly (CD)	Understanding (CS)	Student Responsibility/Freedom (SC)	Uncertain (SO)	Dissatisfied (OS)	Admonishing (OD)	Strict (DO)	Self-Rated Grade	Course Grade
Leadership (DC)	—									
Helping / Friendly (CD)	0.71 ***	—								
Understanding (CS)	0.78 ***	0.69 ***	—							
Student Responsibility/Freedom (SC)	0.02	0.26 ***	0.09	—						
Uncertain (SO)	-0.68 ***	-0.52 ***	-0.58 ***	0.15 *	—					
Dissatisfied (OS)	-0.63 ***	-0.52 ***	-0.68 ***	0.08	0.75 ***	—				
Admonishing (OD)	-0.58 ***	-0.60 ***	-0.58 ***	0.01	0.62 ***	0.72 ***	—			
Strict (DO)	-0.26 ***	-0.37 ***	-0.33 ***	-0.25 ***	0.39 ***	0.50 ***	0.53 ***	—		
Self-Rated Grade	0.07	0.10	0.17 *	-0.01	-0.08	-0.09	-0.05	-0.08	—	
Course Grade	-0.02	-0.06	-0.01	-0.13	-0.06	-0.06	-0.04	-0.04	0.27 ***	—

* p < .05, ** p < .01, *** p < .001

Table 4.10: Results of Regression Analysis for QTI Scales and Student Course Grade

Model	Coefficients	Unstandardized	Standard Error	Standar-dized	t	p	95% CI	
							Lower	Upper
H_0	(Intercept)	64.395	1.336		48.186	< .001	61.759	67.031
H_1	(Intercept)	87.104	13.117		6.641	< .001	61.223	112.99
	Leadership (DC)	-0.246	0.633	-0.055	-0.388	0.699	-1.495	1.004
	Helping / Friendly (CD)	-0.382	0.557	-0.084	-0.685	0.494	-1.481	0.718
	Understanding (CS)	0.030	0.624	0.006	0.048	0.962	-1.202	1.261
	Student Responsibility/Freedom (SC)	-0.533	0.424	-0.109	-1.257	0.210	-1.371	0.304
	Uncertain (SO)	-0.287	0.576	-0.063	-0.498	0.619	-1.423	0.849
	Dissatisfied (OS)	-0.110	0.613	-0.025	-0.179	0.858	-1.320	1.100
	Admonishing (OD)	-0.146	0.528	-0.033	-0.276	0.783	-1.188	0.897
	Strict (DO)	-0.231	0.390	-0.057	-0.593	0.554	-1.000	0.538

None of the scales had a *p*-value < 0.05. Consequently, the data from the sample provides insufficient evidence to support the hypothesis that teacher interaction, represented by the scales of the QTI, can be used to predict student achievement. The next section presents results for student engagement and student achievement.

4.5.6 Student Engagement and Student Achievement

A Pearson correlation was computed to assess the linear relationship between the four scales of the SEQ and the self-rated and end-of-course grades. Table 4.11 shows the results.

Two statistically significant relationships existed between self-rated course grade and Academic Challenge (0.2) and course grade and Student–Staff Interaction (−0.19). However, both of these show a very weak value of *r* (between 0.0 and 0.2, and 0.0 and −0.20; LaMorte, 2016). Each of these on their own has little value in predicting associations between engagement and achievement, yet they are statistically significant. This shows that it is highly likely that there are other important determinants as well. Further comments are made in the analysis of the qualitative data presented later in this chapter. Multiple linear regression was also used to test if the scales of the SEQ assessing student engagement significantly predicted student achievement represented by course grades. Table 4.15 shows the results of the regression analysis.

Table 4.11: Pearson's Correlation for the SEQ Scales and Course Grades

	Academic Challenge (AC)	Active Learning (AL)	Student Staff Interactions (SSI)	Enriching Educational Experiences (EEE	Self-rated Course Grade	Course Grade
Academic Challenge (AC)						
Active Learning (AL)	0.39 ***					
Student Staff Interactions (SSI)	0.38***	0.58***				
Enriching Educational Experiences (EEE	0.21***	0.32***	0.28***			
Self-rated Course Grade	0.20**	0.11	0.00	0.14		0.27***
Course Grade	0.03	-0.01	-0.19**	-0.19**	0.27***	

*p < .05 **p < 0.01***p <. 001

Table 4.12: Results of Regression Analysis for SEQ Scales and Student Course Grade

							95% CI	
Model	Coefficients	Unstandardized	Standard Error	Standardized	t	p	Lower	Upper
H_0	(Intercept)	64.395	1.336		48.186	< .001	61.759	67.031
H_1	(Intercept)	53.836	6.606		8.149	< .001	40.802	66.869
	Academic Challenge	0.269	0.262	0.081	1.028	0.305	-0.247	0.786
	Active Learning (AL)	0.329	0.315	0.095	1.046	0.297	-0.292	0.950
	Student and Staff Interactions (SSI)	-1.297	0.370	-0.313	-3.509	< .001	-2.026	-0.568
	Enriching Educational Experiences (EEE)	0.801	0.419	0.144	1.912	0.057	-0.026	1.627

Two of the four scales (Student–Staff Interactions and Enriching Educational Experiences) had a *p*-value of < 0.05. Consequently, the data from the sample provides evidence to reject the null hypothesis that student engagement, represented by two of the four scales of the SEQ, cannot be used as a predictor of student achievement.

The quantitative data reported in this section provided reliability and descriptive and inferential information on the QTI and SEQ. Thereafter, gender and cultural background

differences were reported in relation to teacher interaction and student engagement. The section concluded by reporting on student achievement in relation to teacher interaction and student engagement. In the next section, the qualitative data gathered in student responses to the open-ended questions of the TISEQ are reported.

4.6 Student Responses to the Open-Ended Questions of the TISEQ

The fourth part of the TISEQ had six open-ended questions. Student responses to each of these questions are now discussed in turn. When the questionnaire was administered in this study, face-to-face classes comprised in-class lectures and tutorials. During a lecture session, students were engaged with the teacher as a whole class and asked and responded to questions individually. In tutorial sessions, students were engaged with the teacher in small groups or as a whole class if the class was small.

Online learning took the form of the use of an LMS, initially Blackboard and later CANVAS. The teachers and students also used email, and in a small number of classes, the teacher and students corresponded with each other using social media platforms such as Facebook or WhatsApp. Video conferencing for teaching and learning was non-existent. Two teachers in the sample used video conferencing (Skype) to communicate with students individually outside of class during advertised student consultation times. Only one teacher recorded his classes and shared this with his classes using the LMS. It is in this context that student responses presented in this section need to be considered.

4.6.1 Preference for Mode of Delivery

Students were asked, ‘If you were able to choose, would you choose to study (A) online only, (B) face-to-face only or (C) a blend of online and face-to-face classes?’ Students were then asked to provide reasons for their choices. There were 189 responses to this question; 10 (5.29%) students chose ‘A’ (online only), 64 (33.86%) students chose ‘B’ (face-to-face only), and 115 (60.85%) students chose ‘C’ (a blend of online and face-to-face classes). Most students preferred blended learning as the mode of delivery. Each of these preferences is now discussed, with student responses categorised into themes.

4.6.1.1 Preference for Mode of Delivery: Online Only

Of the 10 students who chose online only, five students (50%) stated that it was for personal convenience. A typical response was:

> I would like to study online because I can study when my mood is better for study.

Two students preferred online study online since they were working while studying:

> I have a full-time job and a husband + 3 children online would be amazing.

> I am busy to work as a full-time job, so I have not got much time to study face to face.

Another two students selected this option since it would save them travelling and parking costs:

> So that I don't have to come and pay for me parking fees. Save on cost.

> I could study from anywhere mainly from home so I could feel comfortable as I study save various costs like transport.

4.6.1.2 Preference for Mode of Delivery: Face-to-Face Only

There were 64 students who chose the option of face-to-face only. Responses were coded into seven categories, and there were seven blank responses. In some instances, students' responses were coded into more than one category. Hence, the overall number of coded responses, 72, is greater than the number of students. Responses in each of these categories are now presented.

4.6.1.2.1 Suited My Learning Style

Twenty of the 72 (27.77%) responses were in the 'suited my learning style' category. Typical responses were:

> Because I learn better face-to-face and visually.

> I understand better when someone is talking to me face-to-face than reading.

> I chose face-to-face study because I am familiar with it and comfortable too. I think it is an easy way to learn.

4.6.1.2.2 Immediacy of Teacher Feedback

Fourteen of the 72 (19.44%) responses were in the 'immediacy of teacher feedback' category. Typical responses were:

> Face-to-face you get feedback/answer to your questions quickly.

> The reason is face-to-face only because it is better to understand what they are talking and teaching during study.

> I can ask a question and I might get the right answer straight away.

4.6.1.2.3 Relationships With My Peers Support My Learning

Ten of the 72 (13.89%) responses were coded in the 'relationships with my peers support my learning' category. Typical responses were:

> I love interaction with people of different cultures religions of countries (face to face) so studying with them or taught from them is great fun and more practical and easier to ask questions get better help and more explanation from other student.

4.6.1.2.4 Relationships With the Teacher Support My Learning

Another 10 of the 72 (13.89%) responses were coded in the 'relationships with the teacher support my learning' category. Typical responses were:

> I like having face-to-face contact with my lecturer and being able to talk to them in a classroom or lecturer's office. I feel I learn better with an actual lecturer and not a virtual online lecturer.

> I can discuss and the human interaction seems to make absorbing the info easier plus less distractions.

4.6.1.2.5 Teacher Support is Motivating

Six of the 72(8.83%) responses were recorded in the 'teacher support is motivating' category. Typical responses were:

> Face-to-face is important so you can ask questions and get help other methods don't work and make you lose interest.

> The teacher pushes me to study.

4.6.1.2.6 Lack of Internet Access and Technology Challenges

Four of the 72 responses were in the 'lack of internet access and technology challenges' category. A typical response was:

> Online is difficult as I cannot get internet where I live due to being a RD3 area [rural area].

One student noted that online study was technologically challenging.

4.6.1.2.7 Better Preparation for the Workplace

One student noted that the face-to-face learning environment afforded better preparation for the customer service workplace.

4.6.1.3 Preference for Study: Blended Learning

There were 115 students who chose the option of a blend of face-to-face and online. Each student's complete response was coded into a single category. There were four categories identified.

4.6.1.3.1 Face-to-face is Better for Building Relationships, and Online is Convenient for Learning in One's Own Time

Sixty-five of the 115 (56.52%) students' responses were coded in the 'face-to-face is better for building relationships, and online is convenient for learning in one's own time' category. Below is a cross-section of responses in this category.

> I think for me I like to work/study face-to-face to know/understand what the lecturer/tutor is teaching and be able to ask questions if I don't understand. Study online from home is good if you away for a day/two from sickness or something else important.

> I do think that face-to-face and class interaction is important when it comes to understanding the subject matter and obtaining feedback is important. I also think that online study is good because we are able to review what we learn and take part in class when we cannot attend.

> In order for me to understand and connect with the content being taught I must be able to connect with the lecturer if I am unable to connect with them then online would be an option.
>
> I think both are important because through online we can access to this information any time. Face-to-face if we have any issue we can take feedback immediately from the teacher.
>
> Some of the coursework can be self-study while some class activities need to be done together with other students and the teacher. Self-study for how to do research can be done online.

4.6.1.3.2 Flexibility for Learning

Forty-two of the 115 (36.52%) student responses were coded in the category 'flexibility for learning'. These students were of the view that blended learning provided the opportunity for them to work online or face-to-face based on their individual circumstances or learning needs. Typical responses were:

> Offers students flexibility sometimes it is hard to come in for class + then sometimes students prefer that one on one interaction flexibility option is better.
>
> I like to study face-to-face, but should another priority occur, I would like to have an option to catch up online.
>
> Because sometimes if someone not feeling good or stuck at home for whatever reason online classes help in such a situation otherwise, I prefer face-to-face classes because it is more easier to me to learn like this.

4.6.1.3.3 Cost Saving With the Online Learning Option.

Two students who opted for blended learning noted the cost saving of online study. One response was:

> I like face-to-face learning but because I travel far, I think some online study would also be appropriate to save costs.

4.7 Better Preparation for the Workplace

Two students selected the blended learning option in this category. One response was:

> With the changing world and introduction of many new technologies it is very important to have a blend of online and face-to-face experience. At the workplace we might have to put that into practice.

In the next section student responses to Question 2 of the TISEQ are reported.

4.7.1 Teacher Interaction in the Blended Learning Environment

The second open-ended question asked students, 'Do you feel you and your teacher interact better online or face-to-face in this class? Give reasons for your answer.' There were 184 student responses to this question: 11 (5.97%) felt that they interacted better with their teacher online, 142 (77.18%) felt that they interacted better with their teacher face-to-face, and 32 (17.39%) felt that their interaction with the teacher was the same in the face-to-face and online learning environment. Each of these preferences is now presented with student responses categorised into themes.

4.7.1.1 Online

4.7.1.1.1 Language Barriers

Five of the 11 students felt that they interacted with the teacher better online owing to the language barriers which existed in face-to-face classes. A typical response was:

> I am Chinese speaking, and I don't speak very well. The teacher also speaks very fast. Online is better because I can read and then write.

4.7.1.1.2 Suits My Personality

Three of the 11 students felt they interacted with the teacher better online since they were shy and lacked the confidence to ask and answer questions in face-to-face classes. A typical response was:

> I'm shy and I feel more confident contacting the teacher online I rarely stand up to answer or raise a question.

4.7.1.1.3 Effect of the Teacher on Me

Two of the 11 students felt they interacted with the teacher better online because the teacher became angry easily in face-to-face classes. A typical response was:

> Online is better because he gets mad easily if face-to-face and I feel stressed.

4.7.1.2 Face-To-Face

Of the 184 students, 142 felt they interacted better with their teacher face-to-face. The reasons they provided for this response were placed into four categories: 'better communication and interaction', 'good for building relationships' and 'limited engagement online'.

4.7.1.2.1 Better Communication and Interaction

Of the 142 students, 102 felt that they interacted better with their teacher in face-to-face classes since they communicated and interacted better. They had the opportunity to read and interpret nonverbal cues such as body language, which improved their communication and interaction with the teacher and their learning. Some of these responses were:

> Face-to-face classes allow students to ask their lecturers questions, to seek advice about their studies etc.

> There is more understanding when you talk with your teacher face-to-face and the teacher will explain the work until you understand exactly what to do.

> As this adds a direct interaction of not just raw information but reading body language and intention. This also eases the task of asking questions and discussing things.

> You can have a conversation ask questions straight away and get a response. And I believe it is easier to express what I want to say plus I get to see the teacher's body language.

4.7.1.2.2 Good for Relationship Building

Twenty-one of the 142 students felt that they interacted better with their teacher in face-to-face classes since they had the opportunity to build relationships with their teachers. They could appreciate their teacher's sense of humour and become more comfortable in their classes. Typical responses were:

> Its better interacting face to face. I'm all about building relationships between a teacher and student which makes a difference in a student's learning experience.

> Face to face. Because my teacher helps me with my studies and personal life problems.
>
> My teacher is full of humour, so it is better for us to have face-to-face classes with him.

4.7.1.2.3 Limited Engagement Online

Five of the 142 students felt that their teachers had limited engagement with them online, and consequently, they interacted better with their teachers face-to-face. In the last group of responses to the question, 'Do you feel you and your teacher interact better online or face-to-face in this class? Give reasons for your answer', 32 out of the 184 students responded that they had no preference as they interacted the same online and face-to-face. The nature and context of what they were learning gave them the choice to study online or face-to-face. However, their interaction with their teachers is the same in both environments in their view. Typical responses were:

> Both types are important for this course because online we can interact any time and face-to-face we are able to solve problems more easily.
>
> My teacher interacts well online as well as face-to-face in my class because he has a great skills to explain the things. I make the choice how I learn.
>
> It depends on teacher/student/topic of issue or problem. Group work is better face to face.

In the next section, student responses to the third open-ended question of the TISEQ are presented.

4.7.2 Student Motivation in the Blended Learning Environment

The third open-ended question asked students, 'Do you feel you are more motivated to learn online or face-to-face in this class? Explain your answer.' There were 182 student responses to this question: 20 (11%) felt that they were more motivated to study online, 139(76.37%) felt that they were more motivated to study face-to-face, and 23(12.63%) felt that their motivation to study was the same in the face-to-face and online learning environment. The reasons supporting these responses have been categorised into themes and are presented below.

4.7.2.1 Online

The 20 students who felt that they were more motivated to study online than in the face-to-face environment provided reasons which were placed into three themes, namely, ‘suits my learning style’ (12/20), ‘work at my own pace’ (6/20) and ‘fewer distractions online’ (2/20).

4.7.2.1.1 Suits My Learning Style

Twelve of the 20 students felt that they were more motivated to learn online since the online environment suited their learning style. A typical response was:

> I’m motivated to learn online as I would be alone while learning which raises my confidence as I don’t like to study in class.

4.7.2.1.2 Work at My Own Pace

Six out of the 20 students felt they were more motivated to learn online since the online environment allows them to work at their own pace. A typical response was:

> Online because I can go at my own pace and work on in an environment of my choice. Online also has many resources to access quickly which helps with studying and I don’t have to rush to finish.

4.7.2.1.3 Fewer Distractions Online

Two of the 20 students felt they were more motivated to learn online since there were fewer distractions in the online environment. They felt distracted or disturbed by their peers in the face-to-face learning environment.

4.7.2.2 Face-To-Face

The 139 students who felt that they were more motivated to study face-to-face than in the online environment provided reasons which were placed into four themes, namely, ‘teacher presence’ (48/139), ‘suits my learning style’ (34/139), ‘social interaction is motivating’ (20/139) and ‘fewer distractions online’ (14/139).

4.7.2.2.1 Teacher Presence

There were 48 students who felt motivated in the face-to-face environment owing to the presence of the teacher. The teacher provided encouragement and support, which these students found motivated them to learn. Typical responses were:

> I feel that face-to-face interactions brings the best out of me. Knowing that there's someone standing in the front guiding me and believing that I have the potential to do things and monitors me.

> Face-to-face because I feel that there is always this authority looking over me and that I need to be focused and this keeps me motivated.

> Face-to-face—the teacher encourages me when I am finding learning difficult.

4.7.2.2.2 Suits My Learning Style

There were 34 students who were more motivated to study in the face-to-face environment since in their view, this was better suited to their individual learning style. Typical responses were:

> I like to learn face-to-face more rather than online because it helps me to build confidence and always keeps me motivated and I can also show my leadership skills physically in front of class.

> Face to face. I'm a kinaesthetic learner. I need to be shown how to do something have support doing it so I can do it correctly myself.

4.7.2.2.3 Social Interaction is Motivating

There were 20 students who perceived that they were more motivated to study face-to-face since they felt that the social interaction with their peers energised and engaged them. Typical responses were:

> Face-to-face—teacher and students help with motivation by engaging you.

> I feel motivated to learn face-to-face not only to ask more questions to the teacher but meet my fellow students in class.

4.7.2.2.4 Fewer Distractions in Face-To-Face Classes

A small number of students (14) felt motivated to study face-to-face since they felt the online learning environment distracted them easily. Social media platforms distract them from their learning. A typical response was:

> Face to face. It's harder to get in the mood to study online—there must be a determined effort. Face-to-face you're already there. Easier to study/concentrate on work at hand. Fewer distractions like Facebook distractions and messenger chats.

In the next section, student responses to the fourth open-ended question of the TISEQ are presented.

4.7.3 Student Engagement in the Blended Learning Environment

The fourth question of the TISEQ asked students, 'Explain what the teacher can do (either online or face-to-face) to engage you more in your learning in this class.' There were 150 student responses to this question. These responses were categorised into six themes: 'provide more feedback', 'more activity-based teaching', 'provide exemplars', 'greater teacher presence', 'improve online resources' and 'more group work'. There were 25 of the 150 students who were satisfied that the teachers were meeting their needs adequately and felt that their teachers did not need to do anything more to keep them engaged in their learning.

4.7.3.1 Provide More Feedback

Thirty-seven of the 150 students felt that they would be more engaged in the blended learning environment if they received more feedback from the teacher. Typical responses were:

> Teachers can help with the learning in this class with more face-to-face interactions and more feedback.

> I know all teachers deal with lots of students but if they can just provide a little interaction personally with each student and give each student feedback that will be great.

> Teacher can identify our weakness and he can give advice to correct it and guide us to write a better project report.

4.7.3.2 More Activity-Based Teaching

Twenty-nine of the 150 students felt that their engagement in the blended learning environment would improve if the teacher used more activity-based teaching. Some typical responses were:

> Activities help different people like me. I learn by doing and watching how it is done rather than reading.

> Teachers can do many activities (life teaching) and provide real-world examples.

> Making the course more interesting by using some cool stuff and not reading from boring PowerPoints to teach the students so that they don't lose attention when they are in class.

4.7.3.3 Provide Exemplars

Nineteen of the 150 students felt that their engagement in the blended learning environment would improve if the teacher provided exemplars. Typical responses were:

> Give more examples maybe exemplars so I get a fair idea of what I am studying.

> The exemplars at the moment works as I get a better idea of the answers expected of me.

4.7.3.4 Greater Teacher Presence

Sixteen of the 150 students felt their teachers had little presence in the classroom. They simply delivered classes without involving themselves in students' learning. Typical responses were:

> Greater teacher involvement for someone like me—take more interest in me and my learning especially online.

> Encourage students to engage in a topic discussion by asking them questions—two-way communication.

4.7.3.5 Improve Online Resources

Sixteen of the 150 students felt that if their teachers improved their online resources, they would be more engaged in their learning. Typical responses were:

> The teacher can put more online resources homework and file documentation as well as hyperlinks to and in my learning.

> In the previous class the lecturer recorded a video of a class he could not attend. If the lecturer recorded himself each time/class and put the video online this would help me engage with subject matter.

4.7.3.6 More Group Work

Nine of the 150 students felt that if their teachers had more group work in face-to-face and online classes, they would be more engaged in their learning. A typical response was:

> A teacher can give topic for group discussion and make groups by choosing students from different countries and putting them in a group.

4.7.4 Student Achievement in the Blended Learning Environment

The fifth question of the TISEQ asked students, 'Explain what the teacher can do (either online or face-to-face) to improve your achievement in this class.' There were 146 student responses to this question. There were 18 of the 146 students who were satisfied that the teachers were meeting their needs adequately and felt that their teachers did not need to do anything more to help them achieve better in their class. The remaining responses were categorised into 10 themes, namely, 'provide more feedback', 'provide exemplars', 'more targeted classes', 'greater teacher presence', 'improve online resources', 'set clear expectations', 'more activity-based teaching', 'more group work', 'create in-work learning opportunities' and 'conation'. Each of these responses are now presented in turn.

4.7.4.1 Provide More Feedback

Twenty-eight of the 146 students felt that if their teacher provided them more feedback on the work generally or their assessments submitted, they would likely achieve better results. Typical responses were:

> Give comments to all my work that will help me know/identify where low/downsides are and improve based on that.

> More comments on how you get the marks they give you.

4.7.4.2 Provide Exemplars

Twenty-four of the 146 students felt that if their teacher provided them with exemplars, they would likely achieve better results. Typical responses were:

> He can provide practice papers with answers so that students can prepare and ask questions when they meet face to face.
>
> Do some regular mock exams to make us prepare better.
>
> The teacher can give me study tasks to go through at my home and can check it in the next class.

4.7.4.3 More Targeted Classes

Twenty-four of the 146 students felt that if their teacher provided more targeted classes to meet their needs, they would likely achieve better. Some were asking for more face-to-face classes:

> More face-to-face classes because you hear everything from the teachers you can ask questions and get an answer straight away rather than having to sit there and wait for an answer.

Others were asking for classes that met their individual learning needs to improve their achievement:

> Some study/ catch-up classes so we can complete some of our assessments.
>
> One on one sessions create more understanding for me.

It was interesting that no students felt that their achievement will be improved by the teacher providing more online classes.

4.7.4.4 Greater Teacher Presence

Eighteen of the 146 students felt their teachers had little presence in the classroom. They felt that if their teachers spent more time communicating with students and taking a greater interest in their learning, they would likely achieve better. Typical responses were:

> Get to know us and what we think and what we expect in this course. Two-way communication will help me achieve.
>
> Encourage and build trust between teacher and student.

4.7.4.5 Improve Online Resources

Ten of the 146 students felt that if their teachers improved their online resources, they would likely achieve better in their classes. A typical response was:

> Provide more specific material rather than so many links to articles and websites relating to the subject.

4.7.4.6 Set Clear Expectations

Nine students out of the 146 felt that they were likely to achieve better if their teachers set clear expectations. A typical response was:

> Give a clear understanding of requirements and how to study/what to study.

4.7.4.7 More Activity-Based Teaching

Nine of the 150 students felt that their achievement in the blended learning environment would improve if the teacher used more activity-based teaching. A typical response was:

> Teacher can organise some activities and demonstrations in class which can help polishing our achievement.

4.7.4.8 More Group Work

Four students responded that they felt they would achieve better if they had more group work. One such response was:

> The lectures can make students to learn more doing group work and learning doing collaborative work.

4.7.4.9 Create In-Work Learning Opportunities

Three students were of the view that if their teachers provided them with in-work learning opportunities, they would achieve better. One such response was:

> The teacher can make us to do an internship and have work experience in order to do our assessments—I will score better marks.

4.7.4.10 My Own Motivation to Succeed

Two students responded, stating how well they achieved was entirely up to them and their own level of motivation to be successful. These responses were:

> Achievement is usually directly proportional to work done by me.

> It's up to me to be more proactive to achieve in class.

4.7.5 Student Achievement in the Blended Learning Environment

The final question of the TISEQ asked students to make any other comments they would like.

Fifty-nine students responded and made similar comments to this question that were captured in the themes presented in responses to the open-ended questions four and five. However, two new themes emerged: 'managing open learning spaces' and 'provision of prescribed textbooks'.

To provide context, the campus where the students were studying has a combination of classrooms. Some rooms have walls and other teaching spaces are without walls or open teaching spaces.

4.7.5.1 Managing Open Learning Spaces

Students made comments that indicated that their learning and achievement was adversely affected by the open spaces. One such comment was:

> The open spaces need to be looked at and a proper consultation process for deciding how students should learn—student involvement in the way we learn.

4.7.5.2 Provision of Prescribed Textbooks

A strategic decision was made not to prescribe textbooks but instead for students to use the allowance they received for course-related costs to purchase their own learning device (laptop computer) to encourage staff to adopt blended learning. Students made comments

to show that this decision had adversely affected their learning. A typical comment made was:

> I feel that the use of textbooks is good in class so if that could start again it would be of great help.

This section presented the results of the open-ended questions of the TISEQ. The results of the focus group sessions are presented in the next section.

4.8 Focus Group Interviews

Based on student responses to the TISEQ, three focus group interviews were conducted. The interviews were semi-structured and included several questions to delve deeper into the responses provided in the TISEQ, focusing on the key themes of the study. As noted earlier in the presentation of the quantitative results, gender and cultural background were important variables in this study. Each focus group, therefore, had a specific composition based on gender and cultural background. All three focus groups were conducted with the researcher in the role of interviewer. The interview ran for 45 minutes and focused on the blended learning environment and students' views of their achievement and engagement in the same teacher's class. Each student was given a pseudonym, allowing them to retain their identity and ensuring participant anonymity. The interview started with finding out more about the students' cultural background.

4.8.1 Language of the Participants

4.8.1.1 Focus Group One

The first focus consisted of five female students: three of Māori and two of Pasifika cultural backgrounds. It was interesting to note that all the members in this group were not able to speak the language of either their mothers or their fathers. They all spoke English.

4.8.1.2 Focus Group Two

The second focus group consisted of six students: three female (one Māori and two New Zealand European) and three male students (one Māori, one Pasifika and one New Zealand European). The female Māori student spoke Māori since both her parents spoke

Māori to her at home, and she attended a Māori immersion school until the age of 10. She was encouraged to speak Māori, and she stated that she was the only one in her class who spoke Māori fluently. All the other students spoke English and no other language. When these students were probed further, they stated that:

> English is the only language I know and speak I have no reason to learn any other language, like Māori because English is used everywhere in NZ. (Dave, New Zealand European/Pakeha male)

> We speak English at home and at school, my parents don't speak Māori maybe the odd word here and there. (James, Māori male)

> Although we came from the islands, we spoke English around our place … it was a common language for us—we had friends from other cultures. (Sione, Samoan male)

4.8.1.3 Focus Group Three

The third focus group consisted of seven students: three female students (two Chinese and one Indian) and four male students (two Indian and two Chinese). All the Chinese students spoke either Mandarin or Chinese as well as English, and the three Indian students spoke Hindi and English. When probed, William, a Chinese male student, stated that his parents hardly ever spoke English, and he only spoke English 'out of the house when I needed to… like when I go shopping'. The other students agreed that they were similar. The two Chinese students added that they preferred speaking Chinese more than English.

All of the students in this focus group shared the view that their 'home language' was important and their parents made them maintain their use of the language and maintain their culture. Typical responses were:

> We mix mostly with family and friends from our culture, and we all speak our home language, Hindi when we come together for prayers and stuff. (Priyanka, Indian female)

> At home we speak Mandarin because my parents want me to preserve the language and culture. (Lily, Chinese female)

4.8.2 Gender Differences and Student–Teacher Interaction

It has been reported in Section 4.5.1 of this chapter that male students rated their lecturers lower than female students for the positive scales of the QTI and higher than female students for the negative scales of the QTI (see Figure 4.8). Overall, these differences show that females perceive their teachers more positively than males. These findings were probed further in the focus group interviews and these results are presented below.

Each focus group responded to questions related to a specific teacher. Nine of the 11 females across the three groups expressed their views in more positive terms than the males. Only two female students perceived their teachers in negative terms. One of them in focus group one stated:

> Our teacher's grading is not consistent. I compared my answers with Jim's. I don't know how she graded me lower than him. It is very demotivating. (Brenda)

Another female student in focus group three also made negative comments about her teacher's availability:

> Our other lecturer, if I messaged or emailed, she would always respond. This lecturer, now, barely responds when I'm in need of help. (Theresa)

All of the other students in the other focus groups spoke positively about their teachers. However, the females expressed their views more positively when compared with the males. Here are the female responses from the three groups showing this positive expression:

> She is so open to questions and … curiosity inspires our love for learning. (Devika)

> She tries really hard to connect with us. She has … I mean really knows how to build good relationships. (Jessica)

> I like how she handles conflicts with caring and understanding. It creates such a peaceful, caring atmosphere in class. (Annie)

> Sets a great example for us and you want to work extra hard in her class to please her. (Karen)

The males expressing their views about the same teachers used comparatively less effusive language:

> I think she manages the class in a way that focuses me. (Andy)
>
> Her caring during tough times has made a difference for me. (Pravin)
>
> She allows us to think for ourselves in class. (Harry)
>
> Her feedback is good and on track and this supports my learning. (Sione)
>
> But I do enjoy the way that our lecturer teaches us. Well, for me, I do understand the way she teaches and also the time she takes as well.(William)
>
> So maybe for some students, it's a bit too fast or other students, it's a bit too slow. But for me, I feel like it's at a good pace. (James)

Overall, male and female students in the three focus groups felt that their teachers interacted well with them. These findings validated the results of the open-ended questions and the QTI.

4.8.3 Gender Differences and Student Engagement

It has been reported in Section 4.5.2 of this chapter that there was very little difference in male and female responses to the SEQ. These similarities were shown in male and female responses to questions relating to their engagement in class and overall, during their study at the institution. For example when students were commenting on how they were engaged in classes they were taking some comments were:

> She focuses on the content and it up to me if I want to engage with the theory and relate it to my own experiences to make sense of it. (Harry – male student)
>
> I like the way she explains things to help me understand. There is not much she can do to engage me more, it's up to me really to stay involved with what she is teaching. (Annie female student)

Other student responses were similar, indicating that there was no difference in student views about their engagement in class, based on gender.

When students were asked about their engagement with the institution out of class, their responses were similar:

> [Institution's name] does a great job in meeting our needs. There are good opportunities for us to engage in mentoring programmes. In my first year I was a teina (mentee) and this semester I was a tuakana (mentor). (Sione – male student)

> Yes, you can engage in clubs and meetings outside of class. It is the same for all of us. Other than going to the library sessions which I need, I don't do much else. But that's just me. (Brenda)

Similarly, there were no differences in student perceptions of their engagement out of class based on their gender.

4.8.4 Cultural Background and Student–Teacher Interaction

Two key questions were asked in the focus group sessions to encourage students to share their perceptions about their interactions with their teachers:

- Tell me about your relationship with this teacher? (Probe)
- Some people say if you get on well with the teacher you achieve better, some say if you don't get on with the teacher you perform poorly, and others say it makes no difference? What is your view? (Probe)

4.8.4.1 Cultural Background: Asian and Indian Students

Of the five groups, the Asian and Indian students' responses were very similar during the focus group sessions. They expressed their perceptions of their teachers in positive terms only and showed they had deep respect for their teachers and their teachers' authority. Here are some examples:

> [Teacher's name] and I get on very well. I respect her a lot. (Pravin, Indian male)

> I enjoy her classes. She is concerned about me and always answers my questions in class and when I email her. I like how she teaches us. (Devika, Indian female)

> We have a really good relationship. She knows I can get distracted easily so makes me sit up front and gets me working. Other teachers don't care … she cares and makes me work. (Andy, Chinese male)

> In his class I know he is in charge—I like that because he makes everyone work especially when we do group work, he comes around to each group. (Annie, Chinese female)

When these students were responding further to the question, 'Some people say if you get on well with the teacher you achieve better, some say if you don't get on with the teacher you perform poorly, and others say it makes no difference? What is your view?' They all chose to speak about their teachers in ways that showed that getting on with the teacher was very important to achieving successful course outcomes. One of them responded from within Hindu religious discourse, stating:

> I was taught from small, Matha Pitha Guru Deva which means first mother then father then teacher then God. I have to adapt to the teacher not the other way around. This has guided me throughout my studies. (Priyanka, Indian female)

Similarly, other students spoke about their teachers in endearing terms:

> My sir helped me when I was about to give up the course through illness. I missed many classes, and he helped me to catch up. Without him I would have quit. (Sadha, Indian male)

> I'm different to Kiwi students. They argue with the teacher but don't listen. I feel sorry for her sometimes. (Lily, Asian female)

In summary, the responses of these Asian and Indian students reflect a cultural perspective that places a high value on respecting and getting along with teachers. They consider their relationship with their teachers important to their academic success, and they appreciate the authority and support provided by their educators. These cultural values and beliefs play a significant role in shaping their perceptions of their teachers.

4.8.4.2 Cultural Background: Māori and Pasifika Students

The responses of Māori and Pasifika students were more similar to each other than they were to any of the other groups. (Chinese, Indian and New Zealand European). These students' responses to the two questions relating to their interaction with their teachers are now presented. When asked about their relationship with their respective teachers, both Māori and Pasifika students responded through a cultural lens. Here are some examples:

> I respect him because he makes me proud of my Māori background, even though he is not Māori. He uses English and Māori together when he speaks and uses whakatauki [Māori proverbs] to inspire us. (James, Māori male)

> I have a lot of respect for him. He is like an elder who guides us, he doesn't only teach his subject but also how to lead a good life. (Sione, Samoan male)

> She knows that family is important to us Māori. When I had a family situation, she allowed me time to support my family without any pressure. (Brenda, Māori female)

> I really like how she learnt how to pronounce our names correctly… she shows respect for our culture. I feel comfortable around her. (Lydia, Tongan female)

For the Māori students in these focus groups, acknowledgement of their heritage and showing cultural sensitivity are valued. The Pasifika students perceived their teachers as being respecting of them and their culture and providing a supportive learning environment.

4.8.4.3 Cultural Background: New Zealand European Students

The Pakeha/New Zealand European students described their relationships with their teachers differently from the other four groups. They focused their responses on their academic interactions with their teachers and the support they were provided to achieve success:

> I like her teaching style … we get on well. She has a good understanding of her subject and communicates well. (Jessica)

> I have a good rapport with him, and this definitely impacts my marks in this class. He gives us feedback so we can improve our grades. (Dave)

> I come to class to learn … I'm doing two jobs. It's good that he doesn't let the other students distract us. (Harry)

For these students, their relationship with their teachers is based on the teachers' subject knowledge, communication skills, providing feedback and creating a conducive learning environment. This section presented findings from the focus group sessions on how students from different cultural backgrounds perceived their interactions with their teachers. In the next section, findings are presented on how students from different

cultural backgrounds perceived their engagement in class and generally within the institution.

4.9 Cultural Background and Student Engagement

In the previous section, the findings showed clear differences among the students from different cultural backgrounds and how they perceived their interactions with their teachers. In discussing their engagement in class and within the institution, generally, there were no discernible differences between the students from different cultural backgrounds. However, their responses are useful since they affect their learning in the blended learning environment. Key themes that emerged from students' focus group responses are now presented.

Students were asked how they felt they engaged in class related to two scales of the SEQ: Academic Challenge and Active Learning. Each focus group confirmed that, in their perception, they were actively challenged, and there were good opportunities for active learning. However, their responses indicated that opportunities for active learning could be improved if they were provided with more activity-based learning, both online and face-to-face. Some responses were:

> I think we can have more opportunities to have discussions and projects to work on in class so that we can learn how to collaborate in to prepare us for the workplace. (Belinda)

> I don't like PowerPoint teachers. They just talk away. I want to share my ideas and debate in class. We don't do any of that in this class. (Jessica)

> We only get resources online, nothing else happens. (Pravin)

These comments were similar to the responses students provided in response to the open-ended questions in the TISEQ (See Section 4.4.7.4). Students were then asked about how they engaged within the institution related to the other two scales of the SEQ, namely, student and staff interactions and enriching student experiences. Each focus group discussed their overall satisfaction with how they were supported in their learning by their teachers. Beyond that, there was very little engagement with staff outside of class. Some comments were:

> It’s the nature of our subject … we don’t meet the staff outside of class. (Dave)

> When I was at school, we played sports, so we had teachers who coached us and we had BBQs together. We don’t play sport here—we don’t even have sports fields. (James)

> I am a mum; I am working and studying I don’t have any time out of class to do anything. (Belinda)

When they were asked to discuss enriching educational experiences during their study, they shared that they had very few opportunities to participate in such experiences. Some comments were:

> You joking right? In my time here the only thing I can think of is having guest lecturers and we visited a logistics company in the Advanced Project Management course. (Devika)

> When you studying Business or IT its different. The nursing students go out on practicum placements. We get to do our industry project with a client but that is still a part of the programme. (Sione)

The cultural background did not affect how students perceived their interaction in and out of class. In the next section, focus group responses to questions relating to teacher interaction and student achievement are presented.

4.10 Teacher Interaction and Student Achievement

In all three focus groups, there was agreement that the relationship with the teacher affected achievement, irrespective of whether this was in face-to-face or online environments. Students commented that when their teacher was proficient in using technologies online, it helped them achieve better. These comments were consistent with the responses to the open-ended questions. Some examples of student comments made were:

> Like, I know that we do have the recordings, like our classes, but I do know sometimes students do have more questions, but because it's just a recording, and I don't know if like, what the timeframe would be for tutors to reply back to those students. I don’t think she can use video-conferencing for us in small breakout groups it will be good if she learns –

> it will help me since I can't always be onsite. I like the way Mr. QR uses it in his classes, and it definitely helps me achieve in [that] class. (Lydia, female Tongan)

> She can use discussion boards and the chat feature in Canvas [learning management system] She just puts readings there and we don't discuss them except in face to face classes. (James, male Māori)

> We only get resources online, nothing else happens. I have spare time in the evenings to study and it would help my learning if she was able to use other online tools like setting up a section on Canvas for us to share our project docs and chat. (Pravin)

4.11 Student Engagement and Student Achievement

From the focus group discussions, students shared that the relationship with the teacher and resources are important:

> I think, yes, it does affect you. Because if you enjoy having your lecturer, you also enjoy going to classes and like participating in the classes as well. (Brenda)

> Getting along with your lecturer, you would tend to achieve more because you feel more comfortable to ask questions and get a better understanding. (Jessica)

> [The institution] is really supportive towards us. We have all the resources we need to achieve success. there's a lot of ways that we can get help, like, we get offered assistance with our assignments as well, like the librarians and academic learning centre. (Dave)

However, most important for Māori and Pasifika females, self-motivation or conation drives them to be successful. They shared that they would succeed despite institutional or teacher shortcomings to make their children and families proud. Here is how two students expressed their point of view:

> The thing that contributed to that for me was when I came to pick up Sorry, ladies, I came to pick up my kids one day. I walked in, and my eldest daughter's teacher, came up to me and says, 'Are you studying nursing at [institution's name]? I said, Yes, I am. She says, 'good on you'. My daughter's going around, telling them? She was proud of me. (Lydia)

> That's why the majority of us are studying here within New Zealand. We are trying to just get on that ladder of financial stability. I will work hard because I want to succeed to break the cycle for my family. I am the only one standing in my way. I will work hard. Yeah. (Brenda)

For the other students in the group, managing time is important as they are working, studying and parenting simultaneously. Obtaining a tertiary qualification will provide better career prospects. These circumstances are challenging; however, they shared that they have the will to succeed. One student presented his view as follows:

> I am working two jobs. I don't have time to muck around. I have to be committed to achieving my goal. I want to get out of flatting and get ahead. I am focused on getting that outcome. (Dave)

4.12 Chapter Summary

This chapter presented the results of the study. First, the quantitative data were analysed, and the findings were presented. Thereafter, the open-ended questions were analysed, and the key themes were presented. These results were used to construct the questions for the focus group sessions. Student responses to the focus groups were then presented. In the next chapter, these findings are discussed in further detail.

Chapter 5: Analysis and Discussion

5.1 Introduction

Chapter 4 presented the findings of this research based on the data that was collected with the use of the paper-based TISEQ survey and focus group interviews. The survey was administered to 419 students, of which 190 (45%) surveys were analysed as they were complete in all respects, with no missing values or incomprehensible responses. The survey results informed the purposive sampling of the participants for the second phase of the research, namely, focus group discussions (three) with students. This chapter discusses the findings that address the research aim and the specific research questions that informed this study.

This research aimed to investigate students' perceptions of student–teacher interactions and engagement and their impact on student achievement in a blended learning environment. The following research questions were addressed to achieve this aim: In the blended learning environment:

1. How does student–teacher interaction affect student achievement?
2. How does student engagement affect student achievement?
3. How does student gender affect student–teacher interaction?
4. How does student gender affect engagement?
5. How does cultural background affect student–teacher interaction?
6. How does cultural background affect student engagement?

This chapter discusses the findings and relates these findings to recent studies with similar objectives. The significance of the findings of this study is then discussed to lead to the conclusions and recommendations in the final chapter.

5.2 Data Analysis

A mixed methodology integrating quantitative and qualitative approaches was used to answer the research questions in this study. Chapter 3 presented the value of integrating quantitative and qualitative methods to obtain data and a rationale for using a single case study approach. In Chapter 4, the findings were presented. These findings first presented

an analysis of students' demographic information, including gender and cultural background, followed by an analysis of the responses to the TISEQ. JASP, a statistical analysis program and MS Excel were used to evaluate the data and provide descriptive and inferential statistical analysis.

The study used the TISEQ, which combined closed questions and a set of open-ended questions to address each research question. The open-ended questions and focus group interview data provided explanatory depth to the quantitative findings and a contextualised understanding of student responses to the TISEQ. The qualitative data were subjected to thematic analysis to identify recurrent themes, patterns and participant-derived insights. The shared perceptions and experiences among participants about teacher–student interaction through focus groups were also used to answer the research questions. This provided insight into students' perceptions of the blended learning environment and how it affected their achievement and engagement. This chapter now discusses each research question in turn.

5.3 How Does Student–Teacher Interaction Affect Student Achievement in a Blended Learning Environment?

The first research question examined the dynamics of teacher–student interaction in a blended learning environment and how it affects student performance. A mixed methods approach was used to respond to this question, combining focus group insights with quantitative analysis through Pearson's correlation and multiple linear regression. The QTI did not show a statistically significant association with students on course grades, based on the findings from the quantitative analysis. The findings revealed that particular aspects of the teacher–student relationship as assessed by the QTI had little influence on the objective indicator of student achievement: course grades. However, an interesting finding was discovered in the larger context when looking at the correlation between the QTI's understanding scale and self-rated course grades. A weak positive linear association existed between these variables while not attaining statistical significance. It also suggested that students judge themselves higher for course achievement when they rate teachers higher for understanding.

Conversely, compared with the quantitative analysis, the qualitative analysis from the open-ended questions of the TISEQ and the focus groups provided a deeper insight into

the influence of teacher–student interaction on student achievement in blended learning environments. In addition, students noted that their ability to interact with the course material and their overall learning results were positively influenced by teachers who were proficient in using technology. The practical consequences of successful student-teacher interaction were highlighted by this qualitative insight, which added a further dimension to the quantitative findings. While the statistical findings did not reveal a strong connection between student-teacher interaction characteristics and course grades, the qualitative findings made it evident that the significance of these interactions between teachers and students affects student experience and achievement in ways that may not be fully revealed by quantitative research alone.

The notions of teacher presence, cognitive presence, and social presence that the CoI framework (Garrison & Arbaugh, 2007) highlighted were what students identified as important in positively affecting their achievement. The findings from the open-ended questions and the focus group discussions demonstrated that students believed that their achievement and learning were affected by their teachers' interaction with them. In responding to the open-ended questions, students noted that they would achieve better if their teachers provided more feedback, provided exemplars, conducted more targeted classes, had greater teacher presence, improved online resources, set clear expectations, provided more activity-based teaching, provided more group work and created in-work learning opportunities. Students wanted their teachers to guide them more and support them in ways consistent with the CoI framework (Garrison & Arbaugh, 2007).

Students were supportive of their teachers taking on a less traditional role. What students were requesting provided evidence for the theoretical stance of the CoI framework, which was expressed in Chapter 2 of this thesis as follows: In the blended learning environment, the teacher's decision-making in directing learning activities, providing feedback, managing classroom interaction between the teacher and learners and between learners and facilitating learning for learners to achieve educational outcomes is pivotal. In a blended learning setting, the teacher guides and facilitates the students to support learning. According to Zhu et al. (2023), teachers can facilitate problem-solving by stimulating a conversational environment, putting together thoughtful questions that direct students' thinking, advancing them in relying on links between problems and their already existing cognitive structures and encouraging them to share their insights, to

approach problems from multiple perspectives, and engage in knowledge collisions. Simultaneously, problem-solving support and idea-sharing among students will awaken their curiosity and excitement about learning and increase their willingness to participate in class activities. (Zhu et al., 2023).

The interaction between students and teachers in a blended learning setting is critical in determining how well students perform. With the combination of in-person and online learning, this form of instruction develops a dynamic learning environment that facilitates active participation and effective communication. According to Çakır and Bichelmeyer (2016), in a blended learning environment, the interaction between students and teachers significantly affects student's academic performance as it provides students with personalised learning experiences and teachers also provide students with tailored help and feedback according to their unique requirements and individual learning preferences. Çakır and Bichelmeyer (2016) noted in their study that the individualised focus on each student improved students' academic achievement since this increased understanding and mastery of course material. This is consistent with the finding in this study that working with each student on an individual level, whether face-to-face or online, is perceived by students as positively affecting their academic performance. In addition, Sarong and Supartini (2020) conducted a study, and the findings indicated that to develop supportive educational interactions and allow students to learn proactively under teacher guidance, the teacher–student relationship is essential as it fosters effective communication. Such interaction will begin with the students asking questions, responding to peers' inquiries, and practicing the material being studied.

Another study by Sari and Hermawan (2022) showed that blended learning and teacher-student interaction significantly and positively affect student achievement and learning motivation in senior high school. Furthermore, the study by Pennings et al. (2018) demonstrated that teachers and students must engage and interact in spiritual communication and intellectual interchange to promote growth for both sides and improve teaching outcomes. The way that teachers and students engage with one another also reflects the dynamics between them. Teachers and students must communicate emotionally to create an innovative participatory teacher-student relationship (H.L. Sun et al., 2022). Teachers and students can establish a sharing mechanism, either in the form of small group/team discussions face-to-face or in online forums, to better support

students' learning (Pennings et al., 2018). This finding of Pennings et al. (2018) is consistent with the qualitative findings of this study, where students shared the perception that teacher interaction out of class supported their learning and achievement. However, they felt that their teachers were more competent in engaging with them face-to-face since they appeared to lack the skills to interact with them online owing to their teachers' lacking technology skills and knowledge.

According to Van de Pol et al. (2010), teacher–student interaction energises the classroom environment, helping students develop good learning attitudes and enhancing learning. Therefore, when teacher–student interaction is maintained consistently, whether face-to-face or online, as well as during designated 'office hours' outside of class, it can enhance student achievement by fostering better engagement. To accomplish this, students were of the view in the focus group sessions, that teachers needed to have more interactive sessions to engage them more actively in their learning. This, coupled with timely targeted feedback (Sadler, 1998) and the prompt release of assessment results, will improve student achievement (Hattie & Timperley, 2007) since it helps students evaluate their performance in class discussions, improve their self-reflection and attitude, and improve their learning performance. Further exploration of how well students can communicate and collaborate in an online group setting by measuring the number of interactions through class group discussions will be instructive in establishing the impact of teacher–student interaction on achievement.

Kaufmann and Vallade (2021) argue that students' communication readiness will vary depending on their learning setting. It is, therefore, important for teachers to create learning spaces, both online and face-to-face, to encourage student interaction with their peers and the teacher. Students are increasingly more proficient in the online space (Sellnow & Kauffmann, 2017), and teachers need to harness this by allowing students to focus on forming connections, since they have overcome the barriers of the logistics of connecting. While ongoing teacher–student interaction helps provide clarity on specific course-related issues, collaborative peer-to-peer communication encourages increased engagement and has the potential to affect performance positively.

Coll et al. (2001) conducted a study in Fiji, as noted in Chapter 2 of this thesis, and discovered that students' evaluation of their learning experiences was highly influenced by the quality of teacher–student interaction, as measured by the QTI. The significance

of subject-specific contexts on teacher–student dynamics was also noted. Fraser et al. (2010) found that students in Indonesia felt more favourable interactions with teachers in management courses than in computer science courses. Therefore, this thesis is in keeping with other studies (Coll et al., 2001; Fraser et al., 2010; Kaufmann & Vallade, 2021) in concluding that student perceptions and outcomes are significantly affected by the quality of teacher–student interaction as determined by the QTI, in a blended learning environment.

When students discussed their perceptions of their teachers, they noted that they received timeous contextualised feedback during face-to-face classes. However, they sometimes did not receive timely responses to emails, and overall, they felt that it was difficult to create relationships with their teachers online owing to the limited interaction. The study by C.C. Chang et al. (2014) emphasises the significance of high-quality online interaction for raising students' achievement. In addition, students who contributed actively to online discussion forums and received prompt instructor feedback showed substantially more learning gains than their less engaged counterparts in their analysis of a blended calculus course. In blended learning situations, the online space may create a knowledge-building, supportive community where students can ask questions, receive individualised feedback and consolidate their understanding through peer engagement. Students were of the view that the value of in-person communication need not diminish in the online environment. According to Hwang et al. (2019), students in flipped classrooms with a blended learning approach, which includes face-to-face instruction with pre-recorded lectures for independent study and class time devoted to interactive activities, performed better in summative assessments after they engaged in in-person discussions and received tailored advice from teachers. This underscores the value of the human element in blended learning since the distinct vitality and rapidness of in-person communication may solidify comprehension, inspire learners and attend to particular learning needs promptly.

5.4 How Does Student Engagement Affect Student Achievement in a Blended Learning Environment?

The research question of student engagement influencing student achievement in a blended environment is multidimensional, and the findings from both the qualitative and quantitative analysis are presented in this section. The SEQ has six scales, four of which

were used in the TISEQ: Academic Challenge (AC), Active Learning (AL), Student and Staff Interactions (SSI) and Enriching Education Experiences (EEE). Analysis of each of these scales shows that they affect academic achievement differently. Student and Staff Interactions (SSI) and Enriching Education Experiences (EEE) positively influence student achievement since the quantitative findings show that SSI and EEE have statistically significant associations with course grades.

The qualitative findings provided a deeper understanding of how student engagement affects achievement in a blended learning environment. The students' need for individual feedback, which they saw as crucial to enhancing their understanding and academic performance, was identified in the analysis. Consistent with the theory of constructive criticism (Fong et al., 2018), this individual feedback provides a sense of competence and autonomy, two components of intrinsic motivation, in addition to clarifying the meaning and understanding of content. Teachers can raise student engagement levels and improve learning results by providing constructive feedback that meets each student's unique learning needs. However, the relationship between the teacher as a feedback giver and the student as a feedback receiver has proven to be critical in the way the feedback is applied (Fong et al., 2018).

In their study, Fong et al. (2018) enhanced previous feedback models by emphasising the importance of recipients' perceptions regarding feedback, specifically highlighting the need for it to be well-intentioned and tailored to their requirements. This, along with a relationship of care and respect between feedback giver and receiver, adds contextual factors to understanding how feedback can improve learning. The relationship between teacher and student, therefore, affects the way feedback is received and applied to improve achievement. Yeager et al. (2014) found that students who received feedback from teachers who communicated high standards for these students together with the belief that they could improve, were more likely to take the feedback on board and improve their performance in subsequent assessments. In this thesis, students provided qualitative feedback that teachers who cared and supported them in their learning, helped them to engage more and achieve better in that course. Students stated that they needed individualised feedback, which they saw as essential to improving their understanding and academic achievement.

Further analysis of the qualitative findings emphasised how important conation is for student engagement and achievement. While some students need to manage the challenge of creating a balance between their academic aspirations and range of roles such as job and family, others are driven by an intrinsic desire to succeed and see their education as a means to attain personal and family goals. The students with high conation argue that the teacher is not as significant to them since their need for success is so high that the teacher is viewed as a resource similar to textbooks or the library.

As noted in Section 5.3, students emphasised the significance for teachers to be present in both traditional and virtual classroom settings. They respect teachers who actively interact with them, provide assistance and encourage a positive learning environment. As noted, in Chapter 2, Garrison et al. (2010) contended that establishing and maintaining a community of enquiry requires a considered, focused and attentive teaching presence. Teaching presence is defined as the design, facilitation and direction of cognitive and social processes for the purpose of realising personally meaningful and educationally worthwhile learning outcomes (T. Anderson et al., 2001).

The first of the teaching presence responsibilities is establishing curriculum content, learning activities and timelines. The second responsibility is monitoring and managing meaningful collaboration and reflection. The third is ensuring that the community reaches the intended learning outcomes by diagnosing needs and providing timely information and direction (Garrison et al., 2010). In the blended learning classroom environment, the teacher's decision-making in directing learning activities, managing classroom interaction between the teacher and learners and between learners, and facilitating learning to achieve educational outcomes is pivotal. In this research, the students recognised the teacher as responsible for key decision-making, which affected their learning. Students pointed out that the teachers who developed sound relationships with them and responded timeously to their learning needs had a positive impact on their engagement and achievement.

Students also recognised the need for better online resources, outlining that the accessibility of digital learning resources influenced their engagement and learning experiences. Moreover, developing personalised learning pathways is another benefit of blended learning that allows students to take personal responsibility for their learning. This degree of independence increases motivation and provides a sense of responsibility

in their learning, and it can be enhanced by differentiated instruction and adaptive learning systems. This research also found that students who felt more in charge of their learning exhibited more effective academic outcomes, translating to more engagement. Adopting adaptive learning technologies to meet individual student needs is worth trialling in blended learning environments. L. Johnson et al. (2016) noted that personalised learning at scale is made possible through adaptive learning, a recognised teaching method with much promise to satisfy the requirements of a wide range of students. It can also help disadvantaged groups and remote areas access higher education efficiently. Investigating the implementation of adaptive learning technologies in blending learning has merit, especially since students recognise its positive impact on their learning.

The notion of student engagement has grown in importance owing to diminishing student satisfaction in secondary/high school education and tertiary education. Students are simply not attending classes or attending classes but do not actively engage in classroom learning activities, even more so since the pandemic (Alansari et al., 2023). A comprehensive strategy is necessary to measure student engagement in blended environments and to address this lack of engagement both face-to-face and online. In addition to subjective measures like self-report questionnaires, behavioural indicators can also be used, such as completion rates of online activities and participation rates in online discussions (Dixson, 2010). Successfully evaluating the implications of blended learning on student engagement requires a sound understanding of the intricacies of engagement measurement. In blended learning environments, adaptive learning technology has become increasingly prevalent (Beatty, 2014). These resources help adjust education to each student's requirements and learning preferences. These tools can enhance academic achievement by promoting prolonged engagement through scaffolding and adaptive feedback (Smaili et al., 2020).

As students noted in the open-ended questions and the focus group discussions, a key component of the blended learning environment is its flexibility. Similarly, Kumar et al. (2021) stated that blended learning allows students to learn in their own setting and at their own speed by including online teaching components. They can concentrate on connecting with the subject matter more deeply, owing to reduced stress and procrastination. This has been confirmed in research by Means et al. (2013), which

showed that students' achievement in science and mathematics was positively affected by blended learning settings that provide options for time and location flexibility.

This study's overall conclusions of blended learning's beneficial impacts on student engagement and achievement have been supported by other studies. Data from various studies conducted in the United States, Canada and several regions of Europe and Africa suggest that combining in-person education with digital elements improves student engagement and academic achievement. The results discussed in this section combine to show that students in blended educational contexts typically perform better when compared with their counterparts in regular settings (Christopher, 2023). The adaptability of blended learning components, interactive course materials and collaborative activities fosters higher student engagement and consequently positively affects their achievement.

5.5 How Does Student Gender Affect Student–Teacher Interaction in a Blended Learning Environment?

The findings of this research provide insight into students' perceptions of teacher interaction in blended learning environments in relation to gender. The findings from the quantitative analysis indicate that, in contrast to female students, male students tend to rank their teachers lower on the positive scales of the QTI and higher on the negative scales of the QTI. It also suggests that female students have a more positive overall image of their teachers. A deeper understanding of these differences was obtained from the qualitative data from focus group interviews, which indicated that female students typically have more favourable opinions of their teachers when compared with male students. It shows that gender dynamics influence how students perceive their interaction with teachers in blended learning environments, emphasising the need for more research on gender-related issues in learning environments.

As noted in the findings of the three focus group discussions, nine out of 11 female students mainly had positive views about their teachers, as they highlighted items such as how approachable the teacher is, how well they handle disagreements and how well they set an example for the class. In addition, two female students expressed dissatisfaction; one brought up inconsistent grading, and the other questioned the teacher's willingness to help outside of class. The male students spoke less expressively and concentrated more on the teacher's classroom management, assistance during difficult situations and

encouragement of independence through effective feedback. These differences in the responses by male and female students show the dynamics in educational settings that gender can affect how students assess and describe their interactions with teachers in a blended environment. However, male and female students generally expressed satisfaction with their teacher encounters. The three focus groups proved consistent, indicating that they had similar ideas about what constitutes successful student–teacher interaction.

The findings of this research are consistent with earlier studies on how students' gender affects perceptions of participation and interaction with teachers. The study by Chavez and Mitchell (2020) discovered comparable patterns in how male and female students evaluated their teachers on different interaction scales, with females generally having a more positive perception of their teachers than male students. Similarly, Brown et al. (2021) found that although male and female students had different opinions about specific elements of their learning settings, these differences had little effect on their overall performance levels. In addition, this research adds to the increased body of literature emphasising the significance of considering gender dynamics in educational contexts.

Previous studies, such as L. M. Johnson's (2017), have stressed the significance of understanding how gender affects student experiences in the classroom. Gender differences were revealed in a study by Savara and Parahoo (2018), which examined the factors that determine blended learning quality between male and female students. The authors underlined the significance of understanding these variances to improve educational quality. Similarly, gender disparities in student–teacher interactions and perceptions of participation are highlighted in this study. In concluding this section, current and existing studies outline the significance of considering gender dynamics in the blended learning environment to optimise learning for every student.

5.6 How Does Student Gender Affect Student Engagement in a Blended Learning Environment?

The TISEQ gathered data on the impact of student gender on engagement using the SEQ. The findings revealed that male students rated their teachers significantly lower than female students on two scales: Academic Challenge (AC) and Enriching Educational Experiences (EEE). However, no statistically significant differences were observed

between male and female students for the Student and Staff Interactions and Active Learning scales. These results suggest that although male and female students have different perspectives on some areas of their engagement, such as Academic Challenge and Enriching Educational Experiences, they have similar perspectives about Active Learning and Staff Interactions. Although statistically significant, the difference in ratings between male and female students on the SEQ measure has a minor effect size, indicating that their variances may have little practical impact. While quantifiable variations are reflected in the four scales of the SEQ for male and female students, these differences may not significantly affect student engagement per se. The findings from the quantitative analysis indicate that male and female students have similar perceptions of their engagement within the blended learning environment in terms of Active Learning and Student–Staff Interactions, regardless of gender-based differences in other scales of the SEQ. Therefore, while male and female students have differing perceptions of components of their learning environment, their overall engagement experiences and results are insignificant.

The overall score of male students concerning student engagement is lower than that of female students in terms of Academic Challenge (AC) and Enriching Educational Experiences (EEE). There is limited literature that shows any relationship between gender and the engagement of students in blended learning. However, there is significant literature that shows that there are gender differences in terms of learning strategies, learning styles and online learning, which in turn can reflect the degree of engagement of male and female students in the blended learning environment. D. Adams et al. (2020), in their study on learning styles, strategies and their relationship with gender with a sample of 1,174 students at the tertiary level, showed notable differences in the learning strategies associated with acquiring and retrieving information. The results showed that while males use specific strategies more, women prefer other learning modes. The learning preferences of males and females differed based on accessibility to content and learning styles. Therefore, it can be concluded that the differences between males and females in this study are not significant and can be attributed to non-gender-specific differences such as learning styles.

In summary, none of the differences in mean scores between males and females in the scales (AC, AL, SSI and EEE) are statistically significant at the significance level of 0.05.

The effect sizes, while small, suggest minimal practical significance. For the students in this sample, there are no substantial gender differences in the scales of the SEQ. The absence of significant differences shows that the blended learning environment does not present differently to male and female students in this study. This conclusion is supported by previous research. For example, Sabah (2020) conducted a study with university undergraduate students in Palestine, investigating student perceptions of using Moodle in a blended learning environment. The sample size and male–female split were very similar to this research study. While there were significant differences in the sample for students from different universities and for different academic majors, there were no gender-based differences evident. If there were differences, these were attributed to other environmental factors such as instructors, colleagues, department, friends and family. As Sabah (2020) observed, these findings were consistent with other studies, including Sanchez-Franco (2006), Bao et al. (2013), and Kim and Alghamdi (2023).

Some studies reported that female students prefer and score higher in traditional face-to-face learning environments than male students, who score better in online learning environments (Idrizi et al., 2021; Steenwyk & Rokas, 2021; Yu, 2021). However, the consistent conclusion was that these differences were owing to environmental factors and individual personality trait differences, such as conscientiousness, and not gender differences on their own. These studies were similar to this research in that they used small sample sizes at tertiary institutions. These studies recognise the need for further investigation in general tertiary blended settings to examine other contributing factors like learning styles, personality traits, access to technology, course difficulty and social background. All of these areas were commented on by students in the open-ended questions of the TISEQ and reported on in Chapter 4. From this research study the conative domain can be added to the list of factors needing further investigation in relation to gender.

5.7 How Does Cultural Background Affect Student–Teacher Interaction in a Blended Learning Environment?

The quantitative results in Chapter 4 presented the means and standard deviations for each of the five categories of cultural background for the positive and negative scales of the QTI. A one-way ANOVA, shown by the value of F, measured the effect of cultural

background on student perceptions of their teachers' interaction with them. The results showed that New Zealand European or Pakeha students in the sample perceived their teachers lowest on the positive scales of the QTI and highest on the negative scales of the QTI when mean scores were compared with the other cultural groups, namely, Indian Asian, Māori and Pasifika students. Indian students in the sample perceived their teachers highest on the positive scales, and Pasifika students rated their teachers lowest on the negative scales. This shows that cultural background has a bearing on the way students perceive their teachers. However, these differences are not generalisable since they are not statistically significant.

This study also reported a statistically significant main effect of the following positive scales of the QTI: Leadership, Helping/Friendliness, Student Responsibility and Freedom. However, ANOVA did not indicate particular differences between pairs of means for the five cultural background categories; hence, post-hoc analysis was used, which showed a statistically significant difference among students with different cultural backgrounds.

New Zealand European students in this sample rated their teachers lowest on the positive scales of the QTI. During the focus group interviews, the reasons for this rating were revealed. For this group of students, their relationship with their teachers was mostly transactional. They wanted the teacher to support them to achieve academic success. Consequently, they based their relationship with their teachers on the teacher's subject knowledge and communication skills, providing useful feedback and creating a conducive learning environment by ensuring there was a favourable classroom atmosphere for their learning. They valued their teachers disciplining other students, so they were not distracted in their learning.

These results are supported by Hofstede's (2011) six dimensions model, namely, power distance, uncertainty avoidance, individualism versus collectivism, masculinity versus femininity, short-term orientation versus long-term focus and indulgence versus restraint. For the New Zealand European students in this sample, there is a low power distance between themselves and the teacher; hence, they rated them lower on the positive scales. They are high on the individualism scale and, therefore, focus on their relationship with their teacher based on their own academic success. This is best encapsulated in this

response from one of the students in this category: 'I come to class to learn … I'm doing two jobs. It's good that he doesn't let the other students distract us.'

There were also similarities between the categories of students who classified themselves as Asian or Indian, as discussed in Chapter 4 in Sections 4.5.2 and 4.11. These students typically perceived a high power distance between themselves and their teachers. Their educational experience, inculcated by their parents and elders in their home environment, is based on the transmission model where the teacher is all-knowing. In their responses to the focus group questions, it was evident that they revered and respected their teachers, which were markedly different from the New Zealand European students. Fisher et al. (1997) in Australia and Coll et al. (2001) in Fiji had similar findings. Coll et al. (2001), in their study in Fiji, showed the transmission model prevalent at secondary school right through to university, and students from the Indo-Fijian culture responded similarly to the Indian and Asian students in this research study. For this group of students, cultural values and beliefs significantly shape their perceptions of their teachers.

The quantitative and qualitative results for Māori and Pasifika students were more similar to each other than any of the other groups (New Zealand European, Asian and Indian). Māori and Pasifika students rated their teachers lowest on the negative scales compared with the other three groups (NZ European, Asian and Indian). Possible reasons for these similarities were revealed during the focus group interviews. When students from these groups were discussing their relationship with their teachers, the cultural awareness and sensitivity of their teachers were central to how they discussed their relationship with their teachers. For them, the teachers' recognition of their cultural heritage and cultural practices was valued and appreciated. This was more important than the teacher's content knowledge or ability to communicate the subject content. For these students, their connectedness with the teacher was culturally bound.

In a study conducted by Collins et al. (2016) in the USA, one of the research questions was, do cultural intelligence (CQ) (Livermore, 2011) and multicultural exposures of principals and teachers of Latino students predict the academic performance of Latino students? They drew two important conclusions; first, measuring levels of CQ of principals and teachers and raising their awareness of the need for cultural sensitivity may lead to improving the educational experience of minority students. Second, teachers and principals with similar racial or ethnic attributes may influence student performance

indirectly by serving as role models, mentors and change agents. At tertiary institutions similar to the one in this study, the academic performance of Māori and Pasifika students is a central concern. Therefore, strategic planning has target graduation outcomes for Māori and Pasifika.

The students in this research study have acknowledged their teachers' role in creating safe learning spaces for them and supporting them by acknowledging their culture and cultural practices. While there was no clear evidence to support the impact of teachers' cultural awareness and sensitivity on cognitive educational outcomes, there is evidence to suggest that there is an influence on non-cognitive outcomes, like students feeling comfortable and more ready to learn in learning environments when teachers acknowledge cultural values and dispositions of the students. Another study by Hong et al. (2021) conducted with Korean university students as subjects concluded that cultural intelligence among teachers had a significant positive impact on student performance and engagement. This warrants further research to investigate both the cognitive and non-cognitive influence of teachers' cultural awareness and sensitivity in blended learning environments.

According to Shengnan and Hallinger (2021), cooperative learning is a learning process that emphasises group and collaborative efforts between teachers and students. The active participation and interaction of both students and teachers is emphasised. Knowledge is viewed as a social and cultural construct, and therefore, the educational process is facilitated by interaction, evaluation and cooperation between equals. Working together and, importantly, the personal relationships between the teacher and students support student learning and the learners' social growth. This collaborative cultural disposition, particularly evident in Māori and Pasifika cultures, can potentially improve student achievement and engagement. It is different from the previously traditional learning environments based on competition and individualism. There is much to be gained for learners such as the Māori and Pasifika students in this study, where the values and culture of the students are used in the blended learning environment to support their learning. More research, considering the impact of individualised assessment practices in blended learning environments and how they perpetuate disparity and inequity among learners from collectivist backgrounds, such as Māori and Pasifika students, is warranted.

Based on the quantitative and qualitative findings of this study, the cultural background has an impact on student–teacher interaction. This is consistent with previous studies

(Egalite et al., 2014; B.D. Hodges et al., 2011) in which it was found that student–teacher interaction affects the degree of learning and achievement. Culture is at play when students interact with each other and the teacher, in the blended learning environment. Cultural factors such as linguistic competence, cultural practices, and Hofstede's dimensions (Hofstede & Bond, 1984) and their impact on achievement warrant closer scrutiny and further investigation. The assertion that cultural background affects student–teacher interaction is consistent with theoretical and empirical studies. Therefore, teachers must be mindful of the cultural diversity in their classrooms and the impact their own cultural intelligence (Livermore, 2011) has on student–teacher interaction and, ultimately, student achievement and engagement in their blended learning spaces.

5.8 How Does Cultural Background Affect Student Engagement in a Blended Learning Environment?

The results presented in Chapter 4 in Section 4.13 (quantitative findings) and Section 4.8 (qualitative findings) from the focus groups are discussed in this section. The findings presented in Table 4.11 provided insights into the perceived engagement levels of students from different cultural backgrounds, as measured by the SEQ scales. Some of the key points are now presented.

Indian students in the sample reported the highest levels of perceived engagement on three out of four SEQ scales: Academic Challenge, Active Learning and Student and Staff Interactions. A one-way ANOVA analysis was conducted to explore whether there were statistically significant differences in perceived engagement among students from different cultural backgrounds. The results indicated a statistically significant main effect ($p < 0.05$) for two of the four SEQ scales: Active Learning and Student–Staff Interactions. To further investigate the differences identified in the ANOVA, three post-hoc tests were employed: the Bonferroni procedure, Scheffé's method and Tukey's method. Among the post-hoc tests, Tukey's method revealed statistically significant differences. Specifically, it identified significant differences in perceived engagement on the Student–Staff Interaction scale between Pasifika and Indian students ($p = 0.017$).

The significant difference between Pasifika and Indian students on the Student–Staff Interaction scale suggests that cultural or contextual factors may influence how students from these backgrounds perceive their interactions with staff members. Further

qualitative investigation or exploration of cultural nuances may help elucidate the reasons behind this difference.

These findings have implications for understanding and improving student engagement in educational settings, particularly concerning intercultural interactions and support systems. Institutions may benefit from considering cultural diversity when designing programs and support services to enhance student engagement and satisfaction. The notable differences in perceived engagement, particularly on the Student–Staff Interaction scale, suggest that cultural factors significantly shape students' experiences and interactions within the academic environment. While Indian students reported higher levels of engagement in interactions with staff, Pasifika students perceived these interactions differently. This could stem from varying cultural norms, communication styles, or expectations regarding student-teacher relationships.

As noted in the previous section on teacher-student interaction, the findings on student engagement also underscore the importance of adopting culturally sensitive approaches to teaching and learning. Educators and institutions should recognise and respect the diverse cultural backgrounds of their students, acknowledging that cultural differences may influence how students engage with course materials, interact with peers, seek support from staff members, and engage in institutional activities.

The observed differences between Pasifika and Indian students in perceptions of student–staff interactions also raise questions about potential barriers or challenges that students from different cultural backgrounds may face in accessing academic support or building relationships with their teachers. Factors such as language proficiency, familiarity with academic norms, and perceptions of authority may influence students' willingness to engage with their teachers. To address disparities in perceived engagement among culturally diverse student populations, educational institutions must prioritise the creation of inclusive learning environments that foster positive interactions and support the diverse needs of all students. This may involve providing training and professional development opportunities for teaching staff to enhance cultural competence and awareness. The findings highlight the importance of promoting cross-cultural understanding and dialogue within educational settings. Encouraging students to share their perspectives, experiences and cultural backgrounds can help foster empathy, mutual respect and appreciation for diversity among peers and faculty members.

The qualitative data suggest that students perceive themselves as actively challenged in class, indicating a positive engagement with Academic Challenge and Active Learning. However, they express a desire for more activity-based learning opportunities, both online and face-to-face. This aligns with international research emphasising the importance of active learning pedagogies in promoting student engagement and deep learning outcomes (Freeman et al., 2014). Additionally, NZ-based studies underscore the significance of collaborative and interactive learning experiences in enhancing student engagement and academic success (H. Anderson, 2010; Leach, 2014).

The qualitative data also reveal limited engagement with staff outside of class and few opportunities for enriching educational experiences within the institution. While students express satisfaction with teacher support in their learning, they highlight the lack of meaningful interactions and extracurricular activities. Research studies emphasise the importance of supportive student–staff interactions and enriching educational experiences in fostering student engagement, satisfaction, and retention (Hurtado et al., 1998; Pascarella & Terenzini, 2005). In NZ, initiatives promoting student engagement through extracurricular activities and experiential learning opportunities have positively affected student retention and success (Shulruf et al., 2008; Zepke, 2017).

The combined qualitative and quantitative findings suggest that while cultural background may not directly influence student engagement within a blended learning environment, students' perceptions and experiences with active learning opportunities and institutional support have significant implications for their engagement and academic success. Despite cultural differences, students from various backgrounds share similar experiences and perceptions regarding engagement in class and within the institution. This suggests that pedagogical and institutional factors may play a more significant role in shaping student engagement than cultural background alone.

Integrating qualitative and quantitative findings, it is evident that enhancing student engagement in the blended learning environment requires a multifaceted approach. Educators should incorporate more interactive and collaborative learning activities into their teaching practices to better engage students. Institutions should also prioritise fostering meaningful student–staff interactions and providing opportunities for enriching educational experiences beyond the classroom. These findings align with research emphasising the importance of inclusive teaching practices, supportive campus climates,

and extracurricular engagement in promoting student engagement and success (Nguyen et al., 2022; Seifert, 2004).

Other research also provides evidence to support the analysis above. Vahed and Rodriguez (2021) focused on cultural diversity and student performance and recorded that cultural differences affect student motivation and engagement in the learning environment. They observed that cultural factors such as parents' involvement in education, language, social norms and values affect students' engagement in the learning environment. Since learning is a social process, all actors and forces in the learning environment affect student interaction. In the case of students' engagement with blended learning, there is a logical connection between the aforementioned cultural factors and the degree of engagement.

Researchers frequently use inclusive education to reflect the need for ethnic minority students to be included in mainstream educational institutions. Inclusive education mainly focuses on the needs of students who belong to cultural minorities and offers practical strategies for teachers and administrations to engage and motivate such students (Ratnam, 2023). The notion of inclusive education indicates that cultural factors affect the degree of learning of students of cultural minorities. Cultural differences such as religion and social values directly affect student interaction and involvement in the learning environment. The blended learning model is more likely to face cultural difference challenges as it enables students to enrol in institutions that are distant from their country of origin. Hence, it is fair to assume that cultural differences affect students' engagement levels in the blended learning environment (Nottingham & Mao, 2023).

Richter et al. (2021) stated that the terms 'inclusion/exclusion', 'diversity' and 'difference', present in scientific literature and our daily lives, are closely linked. Diversity, as they note, can be considered a sister term of inclusion, as it is present in our society as a whole, meaning that, based on the dynamics of everyday life, our subjectivities and ambiguities appear as constituents of students' own identifications and meanings, making us different and thus making us susceptible to processes of exclusion. This relationship with teachers and peers is dependent upon students' cultural intelligence. Cultural intelligence among students affects their fears, understanding of others, and seeking to engage with differences. This relationship to the students' world can make a considerable difference, not because of what it can offer them but simply

because of its transformative potential to engage them in their learning. Teaching and learning are better if students know how to respect others, understand their roots and seek a new perspective on diversity. The same exists in the case of blended environments and even more so because cultural diversity in blended learning is more common than in traditional face-to-face learning environments (Lin & Shen, 2020).

There are different roles that teachers can play in their profession, and one of them is the challenge of dealing with this diversity. It is essential to prepare teachers to deal with differences. They must be aware of the challenges of teaching students from diverse cultural backgrounds different from the country they find themselves learning in (Goodwin, 2020).

Cultural background differences in the blended learning environment affect the degree of engagement of students. The main factor discussed in the previous section and results is the nature of interaction that culturally diverse students have with teachers and their peers. Since blended learning heavily focuses on collaboration, culturally diverse students must have adequate skills to interact with teachers and peers. Cultural intelligence (in both teachers and students) is essential for student engagement in blended learning. While cultural intelligence falls outside the scope of this research, the impact of cultural background on student–teacher interaction and student engagement highlight the importance of cultural intelligence.

5.9 Discussion

This research study used a mixed methods approach to investigate student–teacher interaction, student achievement and student engagement in a blended learning environment. The variables of gender and cultural background were also investigated. Despite quantitative data finding no association between teacher–student interaction and final course grades or students' self-rated course grades in this study, the qualitative analysis of the study found that student academic achievement was influenced by the teacher's use of technology and engagement. The findings have identified the importance of teachers in promoting critical thinking, classroom discussion and constructive criticism in the blended learning environment. Students valued customised feedback and teacher presence in face-to-face and online learning environments. The findings suggest that flexible blended learning improves student performance and engagement. Some studies

have examined the relationship between academic success and student–teacher interaction with mixed results, such as Çakır and Bichelmeyer's (2016) study found a positive association between course grades and teacher–student interactions.

Conversely, Sari and Hermawan (2022) found no association between teacher–student interaction and academic progress in blended learning environments. These contradicting results show that more research is needed to understand the dynamics of learning and teaching in multicultural and gender-diverse blended learning environments. Although there was no statistically significant association, the qualitative analysis highlighted students' perceptions that teachers' technological competence, high-quality regular feedback and general teacher presence were viewed as positively affecting students' success.

The qualitative findings that technology-mediated interactions boost student learning are supported by Van de Pol et al. (2010). Digital tools allow teachers to create dynamic, engaging learning environments that meet students' needs. Kumar et al. (2021) found that teacher–student relationships affect academic progress, engagement and satisfaction. In addition, Hwang et al. (2019) found that teacher–student interactions promote critical thinking, classroom debates and prompt feedback. These findings demonstrate the extensive impact of teacher–student interactions on learning and development.

H.L. Sun et al. (2022) found that student engagement strongly influenced academic progress in blended learning environments, and course grades and student involvement were positively correlated. Flexible and active learning settings encourage students to take ownership of their education and stay motivated, improving academic achievement. Furthermore, in-person and virtual instructor presence and customised feedback positively affected student achievement. Sarong and Supartini (2020) argue that students seek individualised feedback, and that teacher presence affects the student's learning process. Therefore, combining in-person and online interactions allows customised learning and assessment, potentially improving student learning.

The blended learning environment creates affordances to meet the needs of diverse students. Çakır and Bichelmeyer (2016) suggested that academic achievement is significantly affected by the interactions between students and teachers in a blended learning environment. This is because blended learning allows for personalised learning

experiences for students and the ability for teachers to provide each student feedback and support specific to their needs and preferred study methods. They argued further that students can gain a more profound comprehension and mastery of the subject matter owing to the customised approach, which eventually leads to better academic performance.

This study examined teacher–student interaction in blended learning environments. The quantitative analysis found that male students rate their teachers higher for the negative scales of the QTI and lower for the positive scales. However, most female students rated their teachers more positively. The qualitative findings of the study suggest that female students value their teacher's practicality and efficacy within the classroom as compared with male students. Conversely, male students prioritise classroom management and assistance during challenging times. Gender disparities in student participation are significant, notwithstanding their insignificant effects. Gender does not affect student engagement in blended learning environments. Other factors like learning styles and content choices may affect engagement more than gender. Thus, gender-specific integrated learner engagement may need to be revisited.

Savara and Parahoo (2018) found that female students gave instructors more positive feedback. L.M. Johnson (2017) found that female students rate instructors better for communication and approachability. L.M. Johnson (2017) found that gender does not affect students' teacher ratings, and in the same way, Christopher (2023) conducted a meta-analysis and found no significant differences in male and female students' teacher effectiveness ratings across several parameters. In blended learning environments, Beatty (2014) observed slight gender variation in student–teacher interaction. These conflicting data show that student ratings are nuanced and suggest that gender and other factors may affect academic achievement.

Interaction in blended learning environments between students and teachers from different cultural backgrounds was another theme investigated in this study. The cultural group's perception of teacher–student relationships differed; for instance, Indian students rank teacher interaction highest on the positive scales of the QTI, whereas New Zealand European students rank teachers lowest on the same scales. Cultural differences in language and social conventions may explain these differences. As discussed earlier in this chapter, language, social norms and values affect student engagement. D. Adams et

al. (2020) found that language skills and social norms affect students' teacher assessment across cultures. Zhang et al. (2022) found that students' perceptions of interaction quality vary based on how they view their instructors' conduct. However, some studies found that cultural background may not affect teacher–student relationships, such as Nayar and Koul (2020), who observed no cultural variations in student ratings of teaching efficacy in their meta-analysis, highlighting the need for more research. In contrast, Taheri et al. (2020) found that students from diverse cultural backgrounds interacted with their teachers with discernible differences. Inclusive education emphasises cultural diversity for optimal student engagement. Cultural intelligence helps students interact with their peers from different cultural backgrounds. Teachers need professional development to manage cultural diversity and create inclusive classrooms.

Nottingham and Mao (2023) found that cultural values, beliefs and social customs affect student engagement. Collaborative learning and group cohesion may boost student engagement in blended learning environments in collectivist nations like India. Research shows that cultural intelligence is essential for managing diverse educational environments. Cultural intelligence helps students to understand and adapt to different cultures when engaging with peers from different cultures. Richter et al. (2021) stress cultural competence for inclusive learning and intercultural communication for educators and students. Inclusion frameworks emphasise cultural diversity to boost student achievement and participation. Hence, recognising and appreciating cultural diversity helps educators create inclusive learning environments. Teacher preparation programs must equip educators with the skills, knowledge, and values to support students from diverse cultural backgrounds (Goodwin, 2020).

5.10 Chapter Summary

This chapter discussed student gender and cultural background, teacher–student interaction, achievement and engagement to gain insights into blended learning environments. Quantitative data were gathered using the TISEQ, focusing on student demographics, cultural background and perceptions of teacher–student interaction and engagement in a blended learning environment. MS Excel and JASP, a statistical analysis tool, were utilised to analyse the data. The findings from the TISEQ were discussed in the first section of the chapter.

The chapter's second section discussed focus group interviews with diverse students and groups in an NZ tertiary blended learning setting. The chapter provided a review of the findings and a discussion of the research questions and referred to recent studies in relation to the discussion of the findings of this study. It validated the findings obtained from the current study, along with the significance and implications of the findings.

The chapter revealed that students believed that their success in learning and, eventually, their education depended on their teachers' ability to use online teacher technology effectively. Qualitative results helped clarify how student engagement affects achievement in blended learning environments. Students' perceptions of how their teacher's interaction does and could affect their achievement and engagement were discussed, and conclusions were presented. Student gender and its impact on student–teacher interaction was discussed, and it was concluded that female students have a more positive overall image of their lecturers. Similarly, the chapter further concluded that female students have more favourable perceptions of their teachers than male students. Considering that student gender affects student engagement, it was concluded that male and female learning preferences differed and that gender differences in and of themselves did not account for the differences. The final section discussed the impact of culture on student–teacher interaction and engagement. The next chapter presents conclusions, recommendations, future implications and limitations of this study.

Chapter 6: Conclusions and Recommendations

6.1 Introduction

This research study investigated student and teacher interaction and its impact on achievement and engagement in blended learning environments in a tertiary institution in Auckland, NZ. Student gender and cultural background were other variables considered in this study. A mixed methods single case study methodology was used to gather data to answer the key research questions. The previous chapter presented a discussion of the findings. This chapter suggests some conclusions, identifies the beneficiaries of this research, discusses the potential impact of this study on future research, and discusses the limitations of this study.

6.2 Conclusions

From the discussion in the previous chapter, this section outlines some conclusions of this research.

6.2.1 Learning Environment Research, Blended Learning and Current Practices

Learning environment research has been conducted for many years, and a wide range of instruments have been used to gather data. Most of this research has influenced and advanced theory building in the field and, as importantly, has affected the practice of teaching and learning in different contexts, including higher education settings such as the one in this study. The blended learning environment investigated in this study added a further dimension to the current theory and practice of teaching and learning. When this study commenced, early adopters at tertiary institutions in NZ were developing and implementing blended learning environments on a small scale. Since then, the COVID-19 pandemic has forced online learning on all learners.

The term that describes this forced shift is ‘emergency remote teaching’ (ERT). Hodges et al. (2021) define ERT as:

> A temporary shift of instructional delivery to an alternate delivery model due to crisis circumstances [which] involves the use of fully remote teaching solutions for instruction or education that would otherwise be delivered face-to-face or as blended

> or hybrid courses and that will return to that format once the crisis or emergency has abated. (p. 13)

Following ERT, blended learning is currently the norm across tertiary institutions in NZ. Tertiary institutions may use terms such as 'hybrid learning', 'flexible learning' or 'hy-flex learning'; however, the practice still reflects a combination of face-to-face and online learning in different permutations, synchronously or asynchronously. There are some challenges that tertiary institutions face in the post-pandemic blended learning environment. For example, administrators are grappling with persuading students to return to face-to-face classes, to switch cameras and microphones on during online sessions, and to follow the strict technology protocols of software-driven invigilated online examinations (Fărcașiu et al., 2022; McKinsey, 2021).

Managing student and staff expectations in blended learning contexts based on their perceptions is necessary to ensure that teachers and learners achieve and engage each other successfully in teaching and learning. (Mayes & De Freitas, 2007). As a result of this research, it can be concluded that students expect teachers to have the same or a higher degree of competence when interacting with them online as they do face-to-face. This conclusion is derived from the focus group interviews in which students commented that teachers were not as competent in providing feedback to them online as they were in face-to-face classes. This lack of teacher competence in providing feedback affected students' online engagement negatively. Since blended learning is now commonplace in educational settings, improving teacher competence in providing online feedback is crucial to engaging students in their learning. For example, some ways to leverage technology to deliver feedback include providing video and audio feedback, live polling, blogs and synchronous peer feedback.

6.2.2 The Transformative Potential of Blended Learning

As noted in Chapter 2 Section 2.3.2, tertiary institutions like the one in this study are expected to cater to a larger and more diverse cross-section of the population, particularly Māori and Pasifika, to allow for greater engagement with education to facilitate lifelong learning and to include technology-based practices in learning programs that reflect real-life experiences. Khan's Octagonal framework (Khan, 2003) and the CoI framework (Garrison & Arbaugh, 2007) were considered valuable to evaluate the transformative

potential of blended learning in this research. Based on this study's quantitative and qualitative findings, conclusions relating to the transformative potential of blended learning are presented.

In Khan's Octagonal framework (Khan, 2003) eight dimensions—institutional, pedagogical, technological, interface design, evaluation, management, resource support and ethical—are identified. This framework provided a useful context to evaluate the efficacy of the blended learning environment in the institution in this study from a student and teacher stakeholder perspective. It was evident that blended learning was implemented without a clearly articulated strategy that paid due attention to all eight dimensions. The institution provided technological solutions such as pilot blended learning classrooms and the purchase of audio-visual equipment for staff and students to use for scheduled teaching sessions. Early adopters from the academic teaching staff optimised these technologies and created their own communities of practice with little other institutional support or involvement.

Students in these teachers' classes benefited but were in a minority from an institutional perspective. It became difficult to envisage how students would be socially active and collaborative in online spaces across the institution without a considered blended learning strategic plan. The ethical dimension was of particular concern since students raised this in the focus group interviews. The ethical dimension identifies the ethical issues that must be addressed when developing a blended learning program. Issues such as equal opportunity, cultural diversity, bias, geographical diversity, information accessibility, etiquette and legal issues, including copyright, must be considered (H. Singh, 2003). It was difficult to see how the transformative potential of blended learning could be achieved at this institution without considering all eight dimensions.

The other theoretical construct is the CoI framework (Garrison & Arbaugh, 2007). The CoI framework is a dynamic model of three core elements (social presence, teaching presence and cognitive presence) necessary for developing community and pursuing inquiry in an educational environment (Swan et al. 2009). Data relating to these three presences was gathered from the TISEQ and the focus group interviews. There was sufficient evidence to suggest that the institution and the teaching staff were meeting cognitive presence requirements, as noted by student responses to the Academic Challenge scale of the TISEQ. However, in the areas of social presence and teaching

presence, students' responses suggested that teachers and the institution had room for improvement, especially in the online environment. In open-ended questions and the focus group interviews, students wanted more online interaction with their teachers. The first of the teaching presence responsibilities is establishing curriculum content, learning activities and timelines. As discussed in Section 6.2.2, students suggested that teachers needed greater agency in scheduling learning activities. The second responsibility is monitoring and managing meaningful collaboration and reflection. As discussed in Section 6.2.1, students suggested that their teachers managed this effectively in the face-to-face environment but were not as competent in achieving it in the online environment. It can, therefore, be concluded that to realise the transformative potential of blended learning, cognitive presence, teaching presence, and social presence need to be developed in the online environment as effectively as it is maintained in the face-to-face environment.

6.2.3 Effective Teaching Strategies

In responding to the open-ended questions of the TISEQ and in the focus group interviews, students suggested several ways to improve teacher delivery. These included improving online resources, setting clear goals, providing more assignment feedback, using activity-based teaching, creating role models, increasing teacher presence and communication and encouraging group projects or collaborative learning. Students also expressed concerns about the effects of open learning environments on their learning and advocated for full consultation and student involvement in learning environment decisions. The conclusions drawn from the open-ended responses in the TISEQ and focus group interviews have implications for teaching strategies in the current educational context.

The conclusions from the open-ended questions of the TISEQ and focus group interviews suggest several teaching strategies that can significantly enhance the educational experience. Here is a detailed breakdown of each strategy with implementation ideas:

- **Improving Online Resources**: Students highlighted the need for better online resources. To address this, educators should develop comprehensive and user-friendly online materials. This can include recorded lectures, interactive tutorials and supplementary readings. Investing in high-quality digital content creation and

ensuring these resources are easily accessible through a well-organised LMS can enhance students' ability to learn independently and review materials as needed.

- **Setting Clear Goals**: Clear articulation of learning objectives and outcomes is essential for guiding students. Teachers should begin each course and lesson with a clear outline of the goals. This can be reinforced through a detailed syllabus and regular reminders throughout the course. Regular check-ins to assess whether these goals are being met can help keep students focused and motivated.
- **Providing More Assignment Feedback**: Timely and constructive feedback on assignments is crucial for student development. Educators should aim to provide detailed feedback that highlights both strengths and areas for improvement. Using rubrics can ensure consistency in grading and feedback. Additionally, digital tools can facilitate quicker turnaround times, allowing students to apply feedback promptly in subsequent tasks.
- **Using Activity-Based Teaching**: Incorporating hands-on activities, projects and experiments can make learning more engaging and effective. Teachers should design their classes around active learning principles, such as problem-based and inquiry-based learning. While there was evidence to suggest this was occurring in face-to-face classes, online sessions need to be interactive, for example, using breakout rooms for team-based activities followed by whole class discussion and feedback. These methods encourage students to apply their knowledge in practical contexts, enhancing understanding and retention.
- **Creating Role Models**: Introducing students to role models in their field can inspire and motivate them. This can be done through guest lectures, mentorship programs and case studies. Connecting with alumni, industry professionals and researchers who can share their experiences provides students with real-world insights and guidance on their future careers.
- **Increasing Teacher Presence and Communication**: Enhanced teacher presence and communication can make students feel more supported. Teachers should make themselves more visible and available through regular office hours, online Q&A sessions, and prompt email responses. Utilising both synchronous and asynchronous communication channels effectively ensures consistent interaction and support for students.

- **Encouraging Group Projects or Collaborative Learning**: Group projects and collaborative learning opportunities foster teamwork and peer learning. Educators need to consider designing assessments that require collaboration, using tools and platforms that facilitate group work, such as collaborative documents, discussion forums and peer assessment mechanisms. This approach enhances learning and helps students develop essential interpersonal skills.
- **Addressing Concerns About Open Learning Environments**: While open learning environments offer flexibility, they also require structured support to be effective. Teachers should balance this flexibility with clear expectations and guidelines. Providing resources for effective self-directed learning, maintaining regular touchpoints to monitor progress, and offering support can help students navigate these environments successfully.
- **Advocating for Full Consultation and Student Involvement**: Engaging students in decisions about their learning environments and teaching methods can lead to more effective and inclusive educational practices. Establishing student advisory panels, conducting regular surveys and holding feedback sessions allow educators to gather and act on student input. This collaborative approach ensures educational strategies align with student needs and preferences.

Implementing these teaching strategies based on student feedback can significantly enhance the learning experience by making it more engaging, supportive and aligned with student needs. This approach improves academic outcomes and fosters a more collaborative and inclusive educational environment, ultimately leading to better student outcomes.

6.2.4 Cultural Background and Improving Educational Outcomes

Students' perceptions of teacher interactions were also affected by culture. Indian and Asian students placed a high value on respect for the teacher, and maintaining the power relations between teacher and student was significant for these students. Students identifying as Māori or Pasifika stressed the need for cultural awareness and sensitivity of their teachers to engage them better in their classes.

All students, irrespective of cultural background, favoured a more participatory and collaborative learning environment, such as a constructivist learning environment. Family

values and economic goals drove Māori and Pasifika students despite educational system shortcomings. This study concludes that blended learning settings can potentially improve student achievement, engagement and teacher–student interactions. Also, blended learning settings provide opportunities to understand better how gender and cultural background affect students learning. With the global focus on equity in educational settings (OECD, 2022), the above findings offer the opportunity to change educational practices and policies to ones that promote fair and inclusive academic attainment for all students. In the next section, recommendations based on the conclusions of this study are suggested.

6.3 Recommendations

Given this study's findings and conclusions, the following recommendations are offered to foster effective student–teacher interactions and to promote equity in blended learning environments in higher education settings. The recommendations will be presented in sections for different stakeholders, namely, policymakers, administrators, and teachers.

6.3.1 Recommendations for Policymakers

- **Promote Digital Literacy and Technological Proficiency**

Both teachers and students require 'just-in-time' technology support to enable them to function as effectively in the online environment as they do in the face-to-face environment. Students made comments in the open-ended questions of the TISEQ that they appreciated their teacher's feedback in person; however, the quality of feedback they received online, in their perception, was minimalist and, in some cases, non-existent. They felt that their teachers lacked the skills to provide meaningful feedback online, timeously. At the same time, students require digital literacy support to flourish in blended learning contexts. In the focus group interviews, students shared that while they were skilled in using social media, they were not skilled in working in online education contexts. Funding for 'Just-in-time' support needs to be provided for courses and seminars covering various digital technology skills. Many tools are available to teachers and students, especially post-pandemic, globally, in blended learning environments. These tools can help support learning and teaching by offering students opportunities to interact with each other and the teacher outside of class.

- **Implement Flexible Assessment Methods**

Encourage institutions to adopt diverse assessment practices that account for cultural diversity and varied learning styles. Assessment methods for integrated learning should account for cultural diversity and learning styles. There needs to be a concerted shift from solely individually based assessments to a combination of team and individual assessments. Include group discussions, presentations, portfolios, project-based evaluations, and examinations with written assignments. Allow students a choice of forms of assessment based on culture, hobbies, and skills. Multiple evaluation alternatives can boost student involvement, creativity, critical thinking, and cultural diversity.

- **Cultivate Culturally Responsive Teaching Practices**

Advocate for policies requiring ongoing professional development on culturally responsive teaching to help teachers address blended learning students' diverse needs effectively. Culturally sensitive teaching professional development helps teachers fulfil blended learning students' needs. This could include awareness training on latent biases, cultural diversity, and the integration of culturally relevant instructional materials. Encourage teachers to include ethnic experiences in their classroom learning activities. Culturally relevant instruction and a sense of worth, respect, and involvement in all children can be fostered in inclusive learning environments.

- **Support Cross-Cultural Collaboration Projects:**

Fund programmes that enable cross-cultural collaboration in learning activities. Collaboration should be a cornerstone of curriculum development to enhance teamwork, problem-solving, and intercultural understanding. Assign students to collaborative projects that require their skills, perspectives, and cultural understanding. Cross-cultural collaboration can improve learning and build empathy, teamwork, and intercultural understanding for all students. While this is easier to accomplish in face-to-face environments, it is more challenging to accomplish online, especially if teachers and students do not have the necessary skills and understanding.

6.3.2 Recommendations for Administrators

- **Establish Ongoing Professional Development Programmes**

Institutions need to offer teachers professional growth opportunities. These activities will help teachers gain cultural awareness and competency and improve culturally responsive instruction. These courses may include workshops, seminars, and peer learning groups on cultural competence, cultural sensitivity, and inclusive teaching. Professional development ensures teachers have the skills, expertise, and resources to help students from diverse cultural backgrounds, especially in the online component of the blended learning environment. The approach used by Cresswell and Fisher (2010) discussed in Chapter Two section 2.4.4, will be valuable in that it will create the space for teachers to reflect on their professional practice and determine their own professional development needs. The data gathered from the QTI can be readily shared with the teachers, similar to Crewell and Fisher(2010).

- **Create Safe and Inclusive Learning Spaces**

Ensure that teachers are trained to foster a welcoming classroom environment where students feel safe to express themselves. Students need safe, accepting spaces to express themselves, speak their opinions, and discuss cultural differences in the classroom. Teacher standards should emphasize decency, compassion, and attentive listening. Conflict resolution, restorative circles, and community building can help educators address prejudice, miscommunication, and bias. Teachers can improve student learning, relationships, and social and emotional development by creating a welcoming and inclusive learning environment.

- **Engage Families and Communities**

Develop family and community engagement initiatives to promote cultural diversity and inclusion. Family and community involvement in education is a worthwhile strategy to promote cultural diversity outside the classroom. Encourage family engagement in institutions of higher learning, through family engagement initiatives such as, cultural festivities, and community collaboration that help families and children share languages, cultures, and experiences. Online community conferences and other tools can help higher education teachers work with families, schools, and communities. Through proactive

family and community involvement, educators may create a culturally sensitive and inclusive learning environment for all students, enhance friendships, and improve confidence.

- **Establish Support Networks for Culturally Diverse Students**

Individualized mentoring and assistance are needed for multicultural students in blended learning situations. Students can meet peers with similar backgrounds through mentoring, cultural affinity, and peer support activities. Offer culturally diverse student counsellors, advisers, and support workers with access to advocacy, resources, and assistance. Culturally diverse students can succeed academically, feel well-rounded, and belong in blended learning contexts with solid support networks.

- **Promote Peer Mentorship Programmes**

Implement peer mentoring programmes that connect students of similar cultural and gender identities to help them navigate the challenges of blended learning and to foster a sense of belonging and support. Higher education institutes can improve student achievement, emotional support, and community by pairing mentors with mentees from similar cultural backgrounds and gender identities. Mentors encourage and help mentees succeed academically. Teachers in blended learning environments can promote social cohesiveness, reduce isolation, and boost student engagement by supporting them to develop strong peer networks.

6.3.3 Recommendations for Teachers

- **Integrate Culturally Diverse Content across the Curriculum**

To help students understand and accept diversity, teachers need to actively incorporate culturally varied information and alter instructional resources. This could involve choosing literature, multimedia, and curricula that accurately reflect diverse cultures' experiences and contributions. Culturally varied curriculum improves student learning by reflecting their lived reality, fosters cross-cultural understanding, and empowers students.

- **Provide Targeted Support for Gender-Specific Learning Needs**

Teachers need to assess gender differences and student learning styles. Surveys, interviews, and observation in various learning environments can determine student learning styles. These tests can help teachers offer resources and assistance for males and females based on evidence. Virtual simulations or project-based learning may be included in blended learning if evidence shows male students prefer experiential, hands-on learning. If teachers notice female students prefer collaborative learning, they may encourage group discussions, peer review, and cooperative projects. Educational resources like multimedia, interactive simulations, and culturally appropriate knowledge assist males and females. Alternating tasks and flexible pacing ensure that each student receives personalized attention based on their needs and talents. Teachers may provide all students with a welcoming, inclusive, and supported blended learning environment by proactively addressing gender-specific learning needs and preferences.

- **Conduct Ongoing Cultural Competency Training for Teachers**

Provide educators with ongoing professional development to improve their understanding of diversity and cultural sensitivity in blended learning environments: present cultural awareness, unconscious bias, and intercultural communication courses. Give teachers the tools to create inclusive, culturally aware classrooms and encourage them to examine their biases. Cultural competency in teachers improves blended learning engagement and outcomes by promoting fairness, diversity, and inclusivity. The culturally competent teacher affords students a range of online and face-to-face choices to enable their learning.

- **Cultivate Culturally Responsive Teaching Practices**

Culturally sensitive teaching professional development helps teachers fulfil blended learning students' needs. Create awareness about latent biases, cultural diversity, and culturally appropriate teaching materials. Encourage teachers to include ethnic experiences in their classroom learning activities. Culturally relevant instruction and a sense of worth, respect, and involvement in all children can be fostered in inclusive learning environments.

6.4 Limitations of This Study

In this section, the factors limiting this research are discussed. This study used a mixed method single case study approach to address the research questions and investigate student and teacher perceptions of the blended learning environment. There were 248 students in the sample, and the study was undertaken at a tertiary institution in South Auckland, NZ. While the study has generated a large amount of data, several limitations are now presented.

The first limitation is the length of time it has taken to complete this study. This study was conceptualised in 2012–2013, and the data were gathered over a three-year period from 2015 to 2018. The final thesis was submitted in 2024. Much has changed since the study commenced, and the significance of this research is less valuable to the institution than it would have been if the thesis had been published sooner. Nonetheless, it still provides valuable data for any tertiary institution intending to pursue blended learning options.

Another limitation was accessing learners to conduct focus groups from the original sample. In many cases, learners selected to be a part of the focus groups had completed their studies and left the institute, making it difficult to contact them. However, this was overcome by using convenience sampling to select participants for the focus groups.

A further limitation of this study was the potential lack of representativeness in the sample. If the participants in the TISEQ and focus group interviews do not adequately reflect the diversity of the student population, including variations in age, gender, ethnicity, academic discipline and socio-economic status, the conclusions drawn may not be generalisable. While the study was not meant to be generalisable, for future studies of this nature, ensuring a more diverse sample could provide a broader range of insights and more balanced recommendations.

Another concern is participation bias. Students who chose to engage in the surveys and focus groups might have particularly strong opinions or experiences, either positive or negative, which may not reflect the views of the wider student body. This self-selection could skew the results, emphasising issues that are not as prevalent or significant for the general student population.

The context-specific nature of the study means that its findings might not be applicable across different educational settings. Strategies suggested for improving online resources or increasing teacher presence might be particularly relevant in a higher education context but less so in primary or secondary education environments. Therefore, the applicability of the conclusions may be limited to similar contexts.

Finally, the study does not address the practical challenges of implementing the suggested improvements. Factors such as institutional resource constraints, policy limitations, and varying levels of teacher readiness to adopt new methods could affect the feasibility and success of these strategies. Acknowledging and planning for these challenges is crucial for effective implementation.

Considering these limitations is vital for interpreting the study's findings accurately and applying them effectively. While the student suggestions provide valuable insights, understanding the constraints of the study helps ensure a balanced and realistic approach to educational enhancement. Future research should aim to include more diverse samples and evaluate the long-term effectiveness of the proposed strategies to build a more robust framework for improving teaching and learning environments.

6.5 Contributions of This Study

This study contributes to the growing field of research in blended learning environments by providing a greater understanding of the impact of this environment on learner and teacher interaction. The value of this interaction in any learning environment is significant in determining learner outcomes.

The data gathered in this study can be used by other tertiary education providers in NZ to guide policy on how to use technology to achieve better student outcomes based on student feedback on what works for them and what does not. If there are institutions that want to explore student perceptions of the blended learning environment, the survey instrument used in this study will be useful to them to gain an understanding of student views.

This study is also significant in that it contributes to the field of teaching and learning in the blended learning environment. Teacher feedback is one of the most important determinants of student course achievement (Hattie, 2008). Hattie's (2008) study drew

this conclusion in the face-to-face environment. This thesis provides data to establish whether the same can be said for the blended learning environment. Also, it has been observed that there is a discrepancy in the quality of feedback teachers provide face-to-face and online (Bruce et al., 2012; Gonzales, 2009; Horspool & Lange, 2012). The perceptions of students in this study are instructive in providing direction for the type and quality of feedback teachers provide, as well as the impact of this feedback on student achievement and engagement.

Course completion rate data provided by the New Zeeland Tertiary Education Commission indicate that many students drop out of programs of study and courses before completing. To address this and enhance students' experience in tertiary study, it is important to understand how students are engaged in their studies and the role of teachers, the institution and other students in individual students' educational success. Having data about the student experience, particularly students' interaction with their teachers and engagement with their institution and learning, advances our knowledge about learning processes and outcomes and provides measures that can be used to enhance students' experience and success.

Studies on gender and cultural background in higher education are not common. The investigation of indigenous peoples and the way they interact with their teachers in learning environments in this study can be used in exploring indigenous peoples in other countries and globally. A comparative study in different countries will be instructive.

6.6 Summary and Conclusion

This final chapter has consolidated the investigation into tertiary blended environments and the impact of teacher interaction on student achievement and engagement. Gender and cultural background, two major foci of this study, add a further dimension and offer some insights into how teachers' behaviour is perceived by students coming from diverse backgrounds.

The recommendations offered provide a springboard for engaging administrators and teaching staff in further exploration of how to make real and virtual classroom spaces fertile learning grounds to support students to perform optimally and engage fully in their

learning. With diversity, equity and inclusion front of mind of everyone involved in education at present, this study has made a contribution to addressing inequity in blended learning classrooms – there is a lot more work to be done to realise a better world for all. In the words of Nelson Mandela:

> Education is the great engine of personal development. It is through education that the daughter of a peasant can become a doctor, that the son of a mine worker can become the head of the mine; that a child of farm workers can become the president of a great nation." (Mandela, 1994, p.194)

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Appendix A

Teacher Interaction and Student Engagement Questionnaire

This questionnaire asks you about your experiences as a student.

It is not a TEST. Your opinions are required so therefore there are no right or wrong answers.

I thank you for participating and completing this survey.

Part One

This part of the questionnaire asks you for some demographic details

Are you Male □ Female □

Are you 20 and under □ 21-30 □ 31-40 □ 41-50 □ 51 and over □ What

is the name of Institution you are studying at: _____

What Programme you are studying: (e.g. Bachelor of Applied Management)

What level is this Programme?

Certificate □ Diploma □ Degree □ Other □

Are you Part-Time □ or Full-time □

What is the course code of the class you are in now? _____

What is your email address _____
(in case we need to contact you to take part in an interview)
Which country was your mother born in? _____

Which country was your father born in? _____

What is the main language you speak at home? _____

Which culture do you mainly identify yourself with?

Maori □

Samoan □

Tongan □

Niuean □

Cook Island Maori □

Other Pacific Nation □

Chinese □

Indian □

Other Asian □

European New Zealand/Pakeha □

Other □ Please specify _____

Part Two

This part of the questionnaire asks you to describe the behaviour of your teacher. (We use "teacher" to mean your lecturer or tutor).

For each sentence select the number corresponding to your response For example

This teacher expresses himself/herself clearly

If you think that your teacher always expresses himself/herself clearly, circle the 4.

If you think your teacher never expresses himself/herself clearly, circle the 0.

You also can choose the numbers 1,2 and 3.

If you want to change your answer, cross it out and circle a new number

	Ne er			Always
1 This teacher talks enthusiastically about her /his subject.	0 1	2	3	4
2 This teacher trusts us.	0 1	2	3	4
3 This teacher seems uncertain.	0 1	2	3	4
4 This teacher gets angry unexpectedly.	0 1	2	3	4

	Never			Always
5 This teacher explains things clearly.	0 1	2	3	4
6 If we don't agree with this teacher, we can talk about it.	0 1	2	3	4
7 This teacher is hesitant.	0 1	2	3	4
8 This teacher gets angry quickly.	0 1	2	3	4

	Never			Always
9 This teacher holds our attention.	0 1	2	3	4
10 This teacher is willing to explain things again.	0 1	2	3	4
11 This teacher acts as if she/he does not know what to do.	0 1	2	3	4
12 This teacher is too quick to correct us when we break a rule	0 1	2	3	4

	Never			Always
13 This teacher knows everything that goes on in the course.	0 1	2	3	4

14 If we have something to say, this teacher will listen.	0	1	2	3	4
15 This teacher lets us boss her /him around.	0	1	2	3	4
16 This teacher is impatient.	0	1	2	3	4

	Never				Always
17 This teacher is a good leader.	0	1	2	3	4
18 This teacher realises when we don't understand.	0	1	2	3	4
19 This teacher is not sure what to do when we fool around.	0	1	2	3	4
20 It is easy to pick a fight with this teacher.	0	1	2	3	4

	Never				Always
21 This teacher acts confidently.	0	1	2	3	4
22 This teacher is patient.	0	1	2	3	4
23 It's easy to make a fool out of this teacher .	0	1	2	3	4
24 This teacher is sarcastic.	0	1	2	3	4

	Never				Always
25 This teacher helps us with our work.	0	1	2	3	4
26 We can decide some things in this teacher's course.	0	1	2	3	4
27 This teacher thinks that we cheat.	0	1	2	3	4
28 This teacher is strict.	0	1	2	3	4

	Never				Always
29 This teacher is friendly.	0	1	2	3	4
30 We can influence this teacher.	0	1	2	3	4
31 This teacher thinks that we don't know anything.	0	1	2	3	4
32 We have to be silent in this teacher's course.	0	1	2	3	4

	Never				Always
33 This teacher is someone we can depend on.	0	1	2	3	4
34 This teacher lets us fool around in course.	0	1	2	3	4
35 This teacher puts us down.	0	1	2	3	4
36 This teacher's tests are hard.	0	1	2	3	4

	Never				Always
37 This teacher has a sense of humour.	0	1	2	3	4
38 This teacher lets us get away with a lot in course.	0	1	2	3	4
39 This teacher thinks that we can't do things well.	0	1	2	3	4

40 This teacher's standards are very high.	0 1 2 3 4

	Never Always
41 This teacher can take a joke	0 1 2 3 4
42 This teacher gives us a lot of free time in this course.	0 1 2 3 4
43 This teacher seems dissatisfied.	0 1 2 3 4
44 This teacher is severe when marking papers.	0 1 2 3 4

	Never Always
45 This teacher's course is pleasant.	0 1 2 3 4
46 This teacher is lenient.	0 1 2 3 4
47 This teacher is suspicious.	0 1 2 3 4
48 We are afraid of this teacher	0 1 2 3 4

Part Three

This part of the questionnaire asks you to describe your experience as a student in this course during your current year of study

In your experience at your institution during the current academic year, about how often have you done each of the following?

	Never				Always
49 I asked questions or contributed to discussions in class or online	0	1	2	3	4
50 I made a class or online presentation	0	1	2	3	4
51 I worked with other students on projects during class	0	1	2	3	4
52 I worked with other students outside class to prepare assignments	0	1	2	3	4
53 I tutored or taught other students (paid or voluntary)	0	1	2	3	4
54 I participated in a community-based project (e.g. volunteering) as part of your study	0	1	2	3	4
55 I discussed ideas from my readings or classes with teaching staff outside class	0	1	2	3	4

In your experience at your institution during the current academic year, about how often have you done each of the following?

	Never				Always
56 I discussed my grades or assignments with teaching staff	0	1	2	3	4
57 talked about my career plans with teaching staff or advisors	0	1	2	3	4
58 I received prompt written or oral feedback from teachers on my performance	0	1	2	3	4
59 I worked with teaching staff on activities other than coursework	0	1	2	3	4
60 I work on a project with a staff member outside of coursework requirements	0	1	2	3	4

In your experience at your institution during the current academic year, about how often have you done each of the following?

	Never				Always
61 I used an online learning system to discuss or complete an assignment	0	1	2	3	4

62 I had conversations with students of a different ethnic group to my own	0	1	2	3	4
63 I had conversations with students who are very different from me	0	1	2	3	4
64 I felt contact among students from different economic, social and ethnic backgrounds was encouraged	0	1	2	3	4

In your experience at your institution during the current academic year, about how often have you done each of the following?

	Never				Always
65 Worked harder than you thought you could to meet a teacher's standards or expectation	0	1	2	3	4
66 Spent significant amounts of time on studying and on academic work	0	1	2	3	4

During the current academic year, how much has your coursework emphasised the following intellectual activities?

	Never				Always
67 Analysing the basic elements of an idea, experience or theory	0	1	2	3	4
68 Synthesising and organising ideas, information or experiences	0	1	2	3	4
69 Making judgements about value of information, arguments or methods	0	1	2	3	4
70 Applying theories or concepts to practical problems or in new situations	0	1	2	3	4

During the current academic year, about how much reading and writing have you done?

	None	1-4	5-10	11-20	more than 20
71 Number of assigned textbooks, books or book-length packs of subject readings	□	□	□	□	□
72 Number of written assignments of fewer than 1,000 words	□	□	□	□	□
73 Number of written assignments of between 1,000 and 5,000 words	□	□	□	□	□
74 Number of written assignments of more than 5,000 words	□	□	□	□	□

About how many hours do you spend in a typical seven-day week doing the following?

	None	1-5	6-12	13- 20	more than 20
75 Preparing for class (e.g. studying, reading, writing, doing homework or lab work, analysing data, rehearsing and other academic activities)	□	□	□	□	□

Part Four

This part of the questionnaire asks you to describe your experience as a student in this course.

How important are these to your learning this year?

	Very important	Important	Little importance	No importance	Not applicable
76 Feeling I belong here	☐	☐	☐	☐	☐
77 Taking responsibility for my learning	☐	☐	☐	☐	☐
78 Knowing how the systems here work	☐	☐	☐	☐	☐
79 Feeling comfortable with other students	☐	☐	☐	☐	☐
80 Knowing where to get help	☐	☐	☐	☐	☐
81 Knowing how to achieve my goals	☐	☐	☐	☐	☐
82 Feeling accepted by teachers	☐	☐	☐	☐	☐
83 Setting high standards for myself	☐	☐	☐	☐	☐
84 Making social contacts with other students	☐	☐	☐	☐	☐
85 Knowing how to apply what I learn	☐	☐	☐	☐	☐
86 Feeling accepted by other students	☐	☐	☐	☐	☐
87 Joining in social occasions	☐	☐	☐	☐	☐
88 Wanting to learn alongside other students	☐	☐	☐	☐	☐
89 Questioning teachers about their teaching	☐	☐	☐	☐	☐
90 Knowing how to help other students with their learning	☐	☐	☐	☐	☐
91 Taking a leadership role in student affairs	☐	☐	☐	☐	☐
92 Wanting to meet teachers' expectations	☐	☐	☐	☐	☐

Which category best represents your grade in this course so far?

No results	0 to 49	50 to 59	60 to 69	70 to 79	80 to 89	90 to 100
☐	☐	☐	☐	☐	☐	☐

Thank you for completing the quantitative part of this survey. One more section to go!!
In the next section I would like you to get your responses to 6 open ended questions.

Please answer the following questions in the spaces provided

1. If you were able to choose would you choose to study

    a. online only
    b. face to face only
    c. blend of online and face to face classes (CIRCLE YOUR CHOICE) Give

reasons for your choice in question 1.

_____

_____

_____

_____

_____

_____

2. Do you feel you and your teacher interact better online or face to face in this class? Give reasons for your answer.

_____

_____

_____

_____

_____

_____

3. Do you feel you are more motivated to learn online or face to face in this class? Explain your answer.

4. Explain what the teacher can do (either online or face to face) to engage you more in your learning in this class.

5. Explain what the teacher can do (either online or face to face) to improve your achievement in this class.

6. Please feel free to make any other comments you would like

_____

_____

_____

_____

_____

_____

I really appreciate the time you have taken to complete this survey. All the best in your studies!!

Appendix B

Associations between Interpersonal Behaviour, Cultural Background, Achievement and Engagement in New Zealand Tertiary Blended Learning Environments: A Case Study

Focus Group Interview brief and Questions

Greetings and welcome to our session. Thanks for taking the time to join us to talk about your experience of learning online and face to face during your study at this institution. My name is Nuddy Pillay. I am studying at Curtin University in Australia. Thank you so much for completing the Teacher Interaction and Student Engagement Questionnaire (TISEQ). In this session I want to ask you about your learning experiences with the teacher in this course, (Name of Course) . I want to know what you like, what you don't like and how the institution could improve to support your learning. I will be having discussions like this with several groups from this campus studying different programmes and courses.

You were invited because you have participated by completing the TISEQ, so you are already familiar with this study.

There are no wrong answers but rather differing points of view. Please feel free to share your point of view even if it differs from what others have said. Keep in mind that I am as interested in negative comments as positive ones, and sometimes the negative comments are the most helpful.

You've probably noticed the microphone. I am recording the session because I don't want to miss any of your comments. People often say very helpful things in these discussions and I can't write fast enough to get them all down. We will be on a first name basis tonight, and we won't use any names in our reports. You are assured of complete confidentiality. This session will be reported on in my research study.

Well, let's begin. I have placed name cards on the table in front of you to help us remember each other's names. Let's find out some more about each other by going around the table. Tell us your name and a little about your cultural background. I am also interested in the languages you speak at home and here within our institution.

Tell me about your relationship with this teacher

Some people say if you get on well with the teacher you achieve better, some say if you don't get on with the teacher you perform poorly, and others say it makes no difference? What is your view.

Is there anything this institution could do to improve your learning in this class?

Tell me about your relationship with each other out of class. Do you do things together like play sport or study together?

How do you feel studying at this institution?

What can this institution do to make you feel better about studying here?

Think back to the first time you came to this campus . You're sitting in the parking lot or getting off the bus or train, preparing to walk into the building to register for your classes. What's going through your mind? What are you worried about? What are you excited about?

What can the institution do to help you be more successful in this course?

What do you believe this institution's teaching staff can do – both inside and outside of the classroom – that would help more students succeed?

What do you believe this institution's teaching staff can do – both inside and outside of the classroom – that would help more students succeed?

Is there anything else you would like to share with me about your study at this institution?

Appendix C

Participant Information Sheet

My name is Nuddy Pillay and I am currently completing a piece of research for my Doctor of Philosophy degree at Curtin University.

Purpose of Research

I am investigating student views of their experiences in the online and face to face learning environments at tertiary institutes in New Zealand.

Your Role

I am interested in finding out what your views are of the impact of online and face to face environments are on your learning as a student.

I would like to find out what you think can make you learn better and what makes it difficult for you to learn in an online environment on the one hand and a face to face environment on the other.

I will ask you to complete a survey online or in hard copy whichever you prefer. To complete the survey will take you no more than 15 minutes. Three months after you complete the survey you may be required to take part in a group discussion with other students. The group discussion will take approximately 45 minutes. These will be audio recorded and transcribed later.

Consent to Participate

Your involvement in the research is entirely voluntary. You have the right to withdraw at any stage without it affecting your rights or my responsibilities. When you have signed the consent form I will assume that you have agreed to participate and allow me to use your data in this research.

Confidentiality

The information you provide will be kept separate from your personal details, and only myself and my supervisor will only have access to this. The interview

transcript will not have your name or any other identifying information on it and in adherence to university policy, the interview tapes and transcribed information will be kept in a locked cabinet for at least five years, before a decision is made as to whether it should be destroyed.

This research has been reviewed and given approval by Curtin University of Technology Human Research Ethics Committee (Approval Number SMEC 749/14). If you would like further information about the study, please feel free to contact me on 09 975 4651 or by email npillay@manukau.ac.nz. Alternatively, you can contact the Human Research Ethics Committee, C/- the Secretary. By email: hrec@curtin.edu.au

Thank you very much for your involvement in this research. Your participation is greatly appreciated

Appendix D

CONSENT FORM

- I understand the purpose and procedures of the study.
- I have been provided with the participation information sheet.
- I understand that the procedure itself may not benefit me.
- I understand that my involvement is voluntary and I can withdraw at any time without problem.
- I understand that no personal identifying information like my name and address will be used in any published materials.
- I understand that all information will be securely stored for at least 5 years before a decision is made as to whether it should be destroyed.
- I have been given the opportunity to ask questions about this research.
- I agree to participate in the study outlined to me.

Name: _____

Signature: _____

Date: _____