School of Education

College Level Business Courses in the UAE: Learning Environment, Teacher Interpersonal Behaviour and Student Adaptive Learning Engagement

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DECLARATION

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university. To the best of my knowledge and belief, this thesis contains no material previously published by any other person except where due acknowledgment has been made.

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Date: 15/10/2019

ABSTRACT

The overarching aims of the study reported in this thesis were, first, to investigate students' perceptions of the learning environment and teacher interpersonal behaviour and the relationships between those perceptions and students' motivation and self-regulation; second, to explore differences between teachers' and students' perceptions in terms of teacher interpersonal behaviour; and, third, to investigate differences between first- and third-year students in terms of perceptions of the learning environment and teacher interpersonal behaviour and self-reports of motivation and self-regulation at college-level business classes.

The sample involved 220 students (120 first-year students and 100 third-year students) and 11 business teachers from the business school of one all-women's college. Data were collected using three questionnaires: the first to assess students' perceptions of the learning environment, the second to assess teachers' interpersonal behaviour (from the perspective of the teacher and the student), and the third to assess students' motivation and engagement.

To address the first three research objectives, the data was analysed to establish the reliability and validity of the three questionnaires in terms of the factor structure, internal consistency, reliability and ability to differentiate between classes (ANOVA). The results provided evidence to support the validity of the surveys when used with college- level business classes in the UAE.

To address the fourth research objective, simple correlation and multiple regression analysis was used to examine relationships between students' perceptions of the learning environment, teacher interpersonal behaviour and student engagement. For the simple correlation, statistically significant associations were found between students' perceptions of their business classes learning environment and students' engagement. The multiple correlations were statistically significant for all four of the motivation outcomes. The regression weights indicated that seven of the ten learning environment scales were positively, significantly and independently related to all four of the motivation and self-regulation outcomes. Second, for teacher interpersonal behaviour–motivation relationships, for the simple correlation statistically significant associations were found between teacher interpersonal behaviour and students' engagement, and the multiple

correlations were statistically significant for all four of the motivation outcomes. The regression weights indicated that three of the eight teacher interpersonal behaviour scales were positively, significantly and independently related to all four of the motivation and self-regulation outcomes, and one negatively, significantly and independently related to three of the motivation and self-regulation outcomes.

The fifth research objective sought to examine whether differences in the actual and preferred perceptions of the learning environment exist. The results of the one-way multivariate analysis of variance (MANOVA) suggests that, for all scales of the learning environment survey, students would prefer a more favourable learning environment than the one that they currently experience.

Research objective six sought to examine whether teachers and students had differing perceptions of the teachers' interpersonal behaviour. The results indicated that students perceive their teachers to display high levels of uncertainty, admonition, responsibility, dissatisfaction and strictness, and low levels of leadership, understanding and helpfulness/friendliness; while teachers perceive their behaviour to display high levels of leadership, helpfulness/friendliness and understanding and low levels of uncertainty, admonition, student responsibility and freedom, dissatisfaction and strict behaviours.

The seventh research objective was to compare the learning environment, teacher interpersonal behaviour and motivation and self-regulation scores for first- and third-year college-level business students. The results indicated that third-year students scored higher than first-year students for all scales except Student Cohesiveness. The results indicated that there was a statistically significant difference for four of the ten learning environment scales.

This study contributes to research on learning environments, teacher interpersonal behaviour, motivation, and self-regulation, as few studies have previously investigated these three different constructs at the same time, and none within college-level business classes in the UAE. The results of this study provide teachers and advisors in UAE with the impetus to refocus and improve their teaching practices. Policy-makers in other countries may also benefit from the findings when considering educational reform in tertiary-level business and, possibly, other subjects. Tertiary level institutions could, potentially, use

these findings to drive future decisions associated with policies in education and strategies for teaching and learning.

ACKNOWLEDGEMENTS

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Chapter 1

RATIONALE AND CONTEXT

1.1 Introduction

The economy of the United Arab Emirates (UAE) was originally based on oil production, but today the oil sector contributes only 30% of the country's GDP, with business, construction and tourism making a large contribution. As a result in this shift in economy, the need for students with business knowledge has increased. According to Hamdy (2012), to keep up with national and global change in business practices, business teachers must constantly re-evaluate and update their teaching content and method to produce high-quality business graduates. Moreover, business teachers need to be aware of updated teaching skills, such as classroom leadership skills and knowledge related to the classroom learning environment. In business classrooms, the teachers play a prominent role in preparing their students to be good citizens and employees, as well as business leaders in government, able to make economic decisions that will benefit their personal and professional lives. As such, teachers enable business students to become entrepreneurs, financial analysts, and market economists (National Business Education Association, 2013, p. vii).

Given the importance of preparing students to be competent, along with other aims, a major purpose of the study reported in this thesis, which was carried out in college-level business classrooms, was to examine the associations between students' views of the learning environment and teacher interpersonal behaviours and their motivation and self-regulation. This chapter provides a rationale for and background to the study. It first provides a context for the study (Section 1.2) and a theoretical framework (Section 1.3). Next, the research objectives for the study are introduced (Section 1.4) and the significance of the research is outlined (Section 1.5). Finally, the chapter provides an overview of the thesis (Section 1.6).

1.2 Context of the study

This section describes the context of the study and is organised under the following headings: history and background of the UAE (Section 1.2.1); the education system in the UAE (Section 1.2.2); tertiary education in the UAE (Section 1.2.3).

1.2.1 History and background of the United Arab Emirates

The United Arab Emirates (UAE) is a country on the Arabian Peninsula, located on the south-eastern coast of the Persian Gulf and the north-western coast of the Gulf of Oman; it borders Saudi Arabia, Qatar and the Sultanate of Oman. Settlement in the UAE, at least in some locations, can be traced back to the third millennium BC. The early history of the UAE reflected a largely nomadic lifestyle in which herding and fishing were the general pattern, as with much of the region. At that time, settlements were made up largely of palm huts and coral buildings. The UAE was populated largely by the Bedouin (desert inhabitants) tribes, fishing villagers and date farmers. The Bedouin tribe made up the bulk of UAE society and were able to live in a range of environments as they moved between the oceans (where pearl diving and fishing were carried out), the desert (moving between grazing areas with camels and herds) and the oasis (where water sources and irrigation allowed for farming of dates and vegetables).

This nomadic lifestyle came to a halt over a very short time period, after oil was discovered. While the discovery of oil initially had only marginal impact, in Abu Dhabi, this changed rapidly. It is fair to say that the lifestyle of the Emirates today bears very limited resemblance to the nomadic lifestyle of even forty years ago.

The UAE was established on 2 December 1971 as a federation of six of the seven emirates, these being Abu Dhabi, Dubai, Sharjah, Ajman, Umm Al Quwain and Fujairah. On 10 February 1972, the seventh emirate, Ras al Khaimah, joined the federation. At the time, the rulers of each of the emirates elected Sheikh Zayed to be the first president, initially for five years. Subsequently, Sheikh Zayed was re-elected several more times and remained president until his death in 2004. As a leader he was considered to be a 'builder of the nation'. When he passed, His Highness Sheikh Khalifa bin Zayed Al Nahyan, Ruler of Abu Dhabi, was elected as the new President of the UAE on 3 November 2004.

Today, the UAE is considered a major international tourist and business centre. It is also considered one of the most modern, stable and safe countries in the world. Although the reserves of oil are limited (with the Dubai reserves expected to last only ten years and Abu Dhabi reserves expected to last 100 years), it has bought unprecedented wealth to a country that boasts one of the highest per capita incomes in the world. Given the limited oil reserves, the UAE leaders have ensured that the country has options other than oil and gas, including trade, tourism, real estate and construction.

1.2.2   Education system in UAE

The first formal schools in the UAE are reported to have been held in the 1930s. The first oorganised modern school was Alqasimiah School, which opened in Sharjah in 1930. At this time, schools adopted the Kuwaiti curriculum in 1953 and female schools were opened under the same name a year later. In stage four, branches of the school were opened in Ras Al Khaimah in 1955 and in Dubai in 1956 and operated under the supervision of the Kuwaiti government; the local Emirates then began the development of instructional materials specific to the region. The Kuwaiti model established three stages for students: the primary stage, requiring six years of study; preparatory stage, requiring three years of study; and, finally, secondary stage, which required three years of study. Up to 1967, students completed their secondary school certificates by taking exams in Kuwait. Primary-level education become free and mandatory for all Emiratis after the UAE was formed in 1971 (Alrawi, 1996; Alnabah, 1996). Schools in the UAE have since gone through different stages of development.

One of the UAE's highest priorities has always been education. As President His Highness Sheikh Zayed Bin Sultan Al Nahyan, founder of the UAE, noted: 'The greatest use that can be made of wealth is to invest it in creating generations of educated and trained people' (ZU, 2015). The education of both males and females has been paramount, and the improvement of literacy rates across the country over the past 50 years is testament to this. Since 1975, when adult literacy was 54 per cent for males and 31 per cent for females, the rates have risen to a point where both genders are now at almost 90 per cent (Embassy of the United Arab Emirates, 2017).

At the time of writing this thesis, initiatives were being introduced across all educational levels. A large-scale education reform initiative has been introduced across K to 12 schooling levels, with the introduction of a range of programmes and the New School Model, designed to make sure that UAE students are competitive in the marketplace and able to attend universities around the world (Abu Dhabi Education Council, 2009). At the tertiary level, many of the world's top ranking universities are implementing programs in the UAE (Embassy of the United Arab Emirates, n.d.)

In 2000, an IT Education Project (ITEP) was initiated by H.H. Sheikh Mohammed bin Rashid Al-Maktoum to set up computer labs in all schools to prepare UAE students for the future workforce. The UAE government realised that the development of young

people in the country would improve future productivity and economic returns (Al Maktoum Official Homepage, 2010, sheikhmohammed.ae/en-us).

1.2.3   Tertiary education in the UAE

The UAE has established an excellent and diversified system of higher education in a relatively short period of time. At the tertiary level, numerous institutions are available to the both the local emirate students as well as expatriate students. There exist both private and public institutions. The private institutions are owned by either by individual Emiratis, local organisations or branches of foreign universities. There is representation from 13 per cent of all international universities worldwide, including Wollongong University, Curtin University, New York University and the Sorbonne, to name but a few.

Only three of the universities in the UAE are public (federal) institutions. These institutions are owned by the government and are allied to the Ministry of Education. These institutions are Zayed University, the UAE University and the Higher College of Technology (HCT). Despite the higher education sector in UAE being relatively young, compared to many other countries there has been substantial growth since the first university was established. This growth in the tertiary sector has, in turn, led to a substantial growth in higher education opportunities for the UAE population (Hijazi, Zoubeidi, Abdalla, Al-Waqfi, & Harb, 2008).

The sample involved in this study was drawn from the tertiary sector. The tertiary level campus had mission to 'provide applied higher education to equip generations with knowledge, skills and competencies that meet international standards and the future needs of the UAE industry and society' (Redacted for anonymity, 2018). To maintain anonymity, the emirate from which the sample was drawn is not named.

The tertiary level college has an enrolment of almost 22,000 students and a staff of just over 2000, making it the largest higher education institution in the UAE. The college has 16 campuses, located in Abu Dhabi, Ruwais, Madinat Zayed, Al Ain, Dubai, Sharjah, Ras Al Khaimah and Fujairah. Despite the fact that the college was founded fairly recently, it has developed rapidly and has established itself as a credible and innovative institution. The different campuses offer a range of programmes, all of which are taught in English. These courses include business, applied media, engineering technology, computer information science, science, education and health sciences. The programmes are all designed to ensure that the students have the relevant skills so that, when they graduate,

they are job-ready. The sample for the present study was drawn from the business programme of one of the 16 college campuses (see Chapter 3 for more details related to sample selection).

1.3   Theoretical framework

Research has been described as a step-by-step process, involving a systematic approach to find something out or, rather, to resolve a research question (Jonker & Pennink, 2010, p. 23). One of the first steps in outlining research methods involves defining the research philosophy (Saunders, Lewis, & Thornhill, 2012, p. 4). Although other important information (such as the strategy, the choice of quantitative, qualitative or mixed methods, the time horizon and, finally, techniques and procedures) needs to be decided upon, the research paradigm helps to determine the weaknesses, the strengths and the problems, all of which are critical for the researcher to understand (Abbariki, Snell, & Easterby-Smith, 2017; Thorpe & Easterby-Smith, 1997). The research paradigm guides or informs the type of evidence gathered and its origin, the way in which such evidence is interpreted, and how it helps to address the research objectives posed. The research paradigm, as knowledge of research philosophy, helps the researcher to evaluate the different methods available, thereby avoiding inappropriate use and identifying the limitations of particular approaches early in the research (Easterby-Smith, Li & Bartunek, 2009).

It is widely agreed that there are four worldviews: post-positivism, constructivism, advocacy/participatory, and pragmatism. The present study drew on post-positivism as this is considered to be appropriate for exploratory studies, such as the one reported in this thesis (Guba & Lincoln, 1994). From this paradigm, it is possible to attempt to build theory and to conduct research in ways that will enhance the objectivity of the research (Creswell, 2009). The present study drew on the post-positivist approach in all aspects of this research, including, collecting and analysing quantitative data. This paradigm was considered to be appropriate given the exploratory nature of the present study, which sought to better understand the relationships between the learning environment and a range of student outcomes in tertiary level business classes in the UAE.

The research described in this thesis sought to examine the influence of classroom environmental features and teacher interpersonal behaviours on students' motivational beliefs and self-regulation in business classrooms. Pertinent to this study was the

theoretical work of Lewin (1936) and Bandura (1986; 1989). Lewin, postulated the formula B = f(P: E), where behaviour (B), is a function of personality (P) and the environment (E). Bandura's social cognitive theory understands human functioning as a pattern of interactions that are reciprocal in nature between three determinants: personal, environmental and behavioural. The interactions are bi-directional between personal determinants (such as a person's thoughts, beliefs, values, perceptions and expectations), environmental factors (such as the relationships in a classroom) and behaviours (such as the ability to stay on task or, conversely, avoidance tactics). The interactions between these determinants illustrate that the relationship between what people feel, think and believe influences their behaviour. For example, when a student feels confident in their ability, or has high self-efficacy beliefs (personal determinant), they might be more willing to participate in challenging classroom activities (behavioural outcome). Or, if a teacher rewards a student for a correct response (behavioural determinant) then this might influence a student's confidence and self-efficacy (personal outcome).

This reciprocal interrelationship between the personal, environmental and behavioural determinants suggests that teachers, who are integral members of the classroom environment, can influence each. For example, if teachers use interesting and engaging activities in their lessons (environmental), then it is likely that they could arouse positive emotions such as interest and enthusiasm, in their students (personal determinant) (Bandura, 1989). As both 'products and producers' of their environment (Bandura, 1989, p. 4), teachers can influence the learning environments (environmental factors). For example, a teacher who provides tasks or instructions in a way that is intimidating might be met with a response from the students that is hostile or defensive (behavioural outcome). The social cognitive theory is described in more detail in Chapter 2.

The study described in this thesis also drew on the field of learning environments, grounded in the work of Kurt Lewin. Lewin (1936) argues that behaviour depends on the state of the environment and the personality of the individual. To depict this interaction, he used the formula B = f (P, E) – where B is behaviour, P is personality and E the environment – to describe what he called the whole psychological situation. This notion is drawn on in the present study in the use of learning environment instruments.

Related to learning environment research – and, arguably an integral component of the learning environment – is the teacher's interpersonal behaviour. In examining this component the study described in this thesis drew on the work of Leary (1957), who

described the personality as the centre of interpersonal behaviour and argued that a person's personality directly influences the way in which they communicate with others. His model states that people communicate according to two dimensions: Dominance–Submission (who is controlling the communication) and Cooperation–Opposition (how much cooperation there is between the people who are communicating). The influence dimension (Dominance–Submission) is used to measure the degree of dominance or control over communication process, and the proximity dimension (Cooperation–Opposition) is used to measure the degree of affinity or cooperation felt by those involved in the communication process.

1.4   Research objectives

The overarching aim of the present study was to investigate whether perceptions of the learning environment and of the teachers' interpersonal behaviours in business courses in the UAE were related to student engagement. Given that, to the best of the researcher's knowledge, none of the instruments had been used previously in the UAE, an important first step was to establish whether the instruments were valid and reliable in this context. Therefore, the first three research objectives were to:

Research Objective 1

> *Examine the reliability and validity of the instrument used to assess students' perceptions of the learning environment when modified and translated for use with UAE tertiary-level business students.*

Research Objective 2

> *Examine the reliability and validity of the instrument used to assess students' perceptions of teacher interpersonal behaviour when modified and translated for use with UAE tertiary-level business students.*

Research Objective 3

> *Examine the reliability and validity of the instrument used to assess students' self-reports of motivation and self-regulation when modified and translated for use with UAE tertiary-level business students.*

Past research has found that relationships exist between student's motivation and self-regulation and their perceptions of learning environment (Kaplan, Lichtinger &

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Gorodetsky, 2009; Pintrich & De Groot, 1990; Suprijono, 2009; Velayutham & Aldridge 2013; Winkel, 2003). There is, however, a dearth of literature examining the relationships between students' motivation and self-regulation and their teacher's interpersonal behaviour (Watt, 2013). Further, to the best of the researcher's knowledge there are no studies that have been carried out in the UAE that examine these factors in the same study. Therefore, this study extends past research by examining, concurrently, the relationship between students' motivation and self-regulation and their perceptions of both the teacher's interpersonal behaviour and the learning environment. Therefore, the fourth research objective was to:

Research Objective 4

Investigate whether relationships exist between students' motivation and self-regulation and their perceptions of the:

   a) *Learning environment; and*
   b) *Teacher's interpersonal behaviour.*

Much of past research has examined whether there are differences between students' perceptions of the actual learning environment and the one that they would prefer (see for example, Fraser, 2012). The results of person–environment fit studies suggest that the closer the alignment between the actual and the preferred learning environment, the more positive the outcomes (Fraser & Fisher, 1983). Given the considerable research that suggests the impact of the learning environment on student outcomes, an examination of the actual–preferred differences, as viewed by the students, was considered to be important. Therefore, the fifth research objective was to:

Research Objective 5

Investigate whether differences exist for students perceptions of their actual and preferred learning environments.

Past studies have examined differences between the perceptions of teachers and students in terms of teacher interpersonal behaviour, both in the West and in the Asia-Pacific region (see for example, Fisher & Fraser, 1983; Könings, Seidel, Brand-Gruwel & Van Merriënboer, 2014; McCroskey & Richmond, 1982; Quek, Wong & Fraser, 2005a; Yoke, 2010). These studies have, by and large, been carried out in Western countries, and it was of interest to determine whether these patterns of findings were consistent for students in

a Middle Eastern context. This gave rise to the formulation of the sixth research objective, which was to:

Research Objective 6

> *Investigate whether differences exist between the perceptions of teachers and students in terms of teacher interpersonal behaviour.*

Past studies have investigated the determinants of the learning environment, including factors such as grade level, teacher personality, class size and gender, including in Singapore at the senior high school level (Quek, Wong & Fraser, 2005a); in Indonesia at the tertiary level (Margianti, Aldridge & Fraser, 2004); and in Singapore at the tertiary level (Khoo & Fraser, 2008). This study extended past research by examining whether these patterns exist in the Middle East and at the tertiary level. Therefore, the seventh research objective was to:

Research Objective 7

Investigate whether differences exist for first and third year students in terms of:

> a) *Learning environment perceptions;*
> b) *Teacher interpersonal behaviour; and*
> c) *Self-reports of motivation and self-regulation.*

1.5   Significance of the research

This section provides a brief overview of the significance of the research reported in this thesis; this information is expanded upon in Chapter 5.

Importantly, the research reported in this thesis provided evidence to support the reliability and validity of three instruments when used in business classes at the college level in the UAE. This information not only provided confidence for the results of the subsequent research objectives, but also contributes to the field of learning environments. Given the dearth of instruments available that are suitable for use in Arabic countries, the validation of these surveys provide an economical and efficient means for researchers and teachers to gather data related to classroom environmental features, teacher interpersonal behaviours and students' motivational and self-regulation beliefs.

Second, this study has extended the field learning environment as it is one of the first studies of its kind to examine students' perceptions of the learning environment, teacher interpersonal behaviour and their engagement in business courses in the UAE. Specifically, this study has contributed to the literature on the relationships between these variables as well as actual–preferred and year-level differences.

Third, the results of this study have the potential to contribute to the overall development of business education in the UAE by increasing understanding of how students' motivation and self-regulation might be enhanced.

1.6   Thesis overview

The current chapter, Chapter 1, has provided information about the context in which this study took place. A brief history and background relating to the UAE was provided. A particular focus was placed on the educational system in the UAE, and the impact of technology in learning in the UAE. The chapter has provided a section that describes the conceptual framework of the study, including the paradigms and design. The research objectives examined in the study were delineated and the significance of the study to the relevant was summarised.

In the next chapter, Chapter 2, a review of literature pertinent to the objective of this research study is provided. In this chapter, literature relevant to the field of learning environments (including teachers' interpersonal behaviour) is explored. Further, the chapter reviews past research that has examined students' and teachers' perceptions of actual and preferred environments. Finally, the chapter includes a review of literature related to students' motivation towards learning and engagement in learning.

In Chapter 3, the research methods used at each stage of the study are described. In this chapter, the research objectives are reiterated. A detailed description is given of the sample used for the collection of data, including information about the college (from which the sample was drawn), the teachers and the students. The three surveys used to collect the data – one to assess perceptions of the learning environment, one to assess teacher interpersonal behaviour and one to assess student engagement – are described in detail. This is followed by a description of the methods of analysis used to address each of the research objectives. Finally, the ethical issues that were considered and how they were addressed are explained in terms of informed consent, confidentiality and other considerations.

In Chapter 4, the results of the analyses conducted to address each research objective are detailed. First, the results pertaining to the analyses used to examine the reliability and validity of the surveys are reported. Second, a description is provided of the results of the analyses used to examine whether relationships exist between students' perceptions of the learning environment and their motivation and engagement and students' perceptions of the teachers' interpersonal behaviour and their motivation and engagement. Third, the results of the analyses used to examine actual–preferred differences in perceptions of the learning environment are reported. Fourth, the results of analysis used to examine differences in students and teachers' perceptions of the teachers' interpersonal behaviour are described. Finally, the results for differences in first and year college students' perceptions of the learning environment, views of the teachers' interpersonal behaviour, and their motivation and engagement are reported.

In the last chapter, Chapter 5, a summary and discussion of the results, reported in Chapter 4, are provided. This chapter serves to situate the findings in the wider field and to examine the implications of the findings for business courses in the UAE. Also included in this chapter is information about the limitations of the study and a summary of the recommendations made. The chapter concludes with a section that reports the significance of the study in terms of its contributions to other researchers and other stakeholders.

Chapter 2

LITERATURE REVIEW

2.1   Introduction

This chapter reviews literature that was relevant to the research reported in this thesis. The chapter starts by providing an overview of social cognitive theory (Section 2.2), as this was pertinent to the theoretical framework of this study. The chapter goes on to review literature related to the field of learning environments (Section 2.3) and, as an integral part of the learning environment, teacher interpersonal behaviour (Section 2.3.2). In these sections, an overview of the history of the field, the instruments available to assess the learning environments and a review of research related to the field are provided. Students' motivation (Section 2.4) and self-regulation (Section 2.5) are then defined and pertinent literature reviewed. The chapter concludes with a chapter summary (Section 2.6)

2.2   Social cognitive theory

The study described in this thesis draws on Bandura's (1986) social cognitive theory, which understands the roles of humans as sequences of interactions that are reciprocal in nature. His triadic model shows the interactions between three factors: those of a personal nature (for example, a student's belief about his or her capabilities); those of an environmental nature (for example, the setting in which a class activity takes place or the nature of an activity that is provided); and those of a behavioural nature (for example, a student's willingness to remain on task). As described in Chapter 1, the three factors all influence each other – that is, each impacts and affects the others. As such, social cognitive theory seeks to describe student learning in terms of the interrelationships between the three factors, personal, environmental and behavioural. This bi-directional relationship is illustrated in Figure 2.1, over.

Underpinning social cognitive theory is the notion of what Bandura termed 'human agency'. Human agency refers to the human characteristics, or personal factors, related to the self-belief that a person can exercise control over their thoughts, feelings and actions. This sense of agency is central to social cognitive theory as "what people think, believe, and feel affects how they behave" (Bandura, 1986, p. 25).
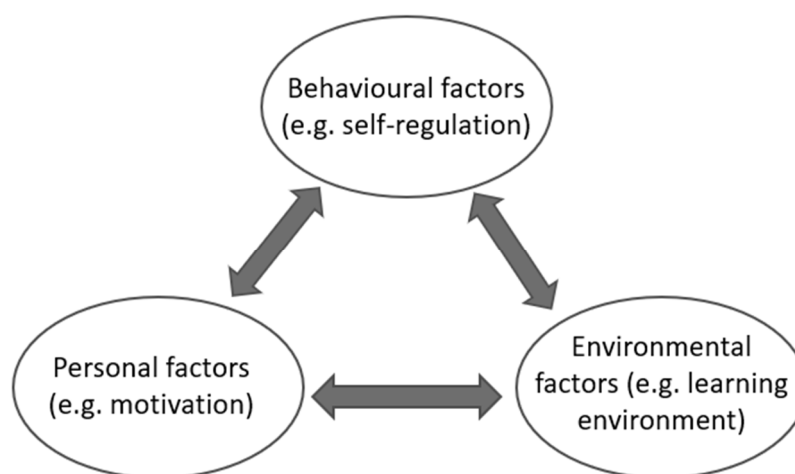
Figure 2.1   Graphic representation of Social Cognitive Theory

Distinct from the sense of agency are the factors related to self-regulation. This aspect of social cognitive theory, the behavioural factors, suggests that people's behaviour is motivated, by and large, by "internal standards and self-evaluative reactions to their own actions" (Bandura, 1986, p. 20). From a social cognitive view, a person's self-regulation is developed through a number of levels: observational, imitative, self-controlled and self-regulated (Schunk, 1996; Zimmerman, 2000).

Given the triadic model of social cognitive theory, it is possible that the classroom learning environment developed by teachers will affect students' beliefs about themselves as learners and their behaviours. Urdan and Schoenfelder (2006) argue that embracing a social cognitive view of student motivation will help teachers to understand that changing facets of the classroom environment that are within their control (such as the types of activities offered to students) has the potential to improve their motivation to learn. In turn, the students' perceptions of the psychosocial environment will also impact on their behaviours. Furthermore, given that teachers are a central part of the classroom environment, they are well placed to encourage and inspire students by creating an environment in which students feel more personally efficacious and motivated (Schunk & Zimmerman, 2007). Given this backdrop, the focus of this research was to examine the influence of psychosocial classroom environmental structures on students' motivational beliefs and self-regulation in business classrooms in the UAE. Given the relevance of the social cognitive theory, as espoused by Bandura, the study reported in this thesis drew on this theory.

2.3   Field of learning environments

Past research in the field of the learning environment has focused, for the most part, on two aspects, namely, the physical environment and the psychosocial environment. The physical environment includes the classroom setting and the materials involved, such as the architecture, furniture and the layout of the classroom; the psychosocial environment includes the students and the teachers, and the way that they interact with each other and with the subject curriculum. It is the psychosocial features of the learning environment that are the focus of the study reported in this thesis.

Students spend a large amount of time in classes; nearly 7000 hours by the completion of their primary education and 15,000 hours by the end of secondary education (Jackson & Philip, 1968). According to Fraser (2001) and Rutter, Maughan, Mortimore, Ouston, and Smith (1979), graduates will have spent about 20,000 hours in classrooms by the time they complete their undergraduate university degree. It makes sense, then, that attention is paid to what happen in those classes as this will impact a range of student outcomes (Fraser, 2012).

There has been much progress in the conceptualisation, assessment and examination of the learning environment's determinants and their impacts. Numerous questionnaires have been developed by researchers to examine students' perceptions of their classroom learning environment. Fraser (2012) explains that such questionnaires provide a range of information about the participation of students in classes (whether this is active or passive, e.g. listening to the teacher); the supportiveness of the teacher and whether he/she is approachable; whether students are provided with opportunities to have input into the teaching and assessment methods; whether students work independently or in groups that require cooperation and discussion; whether the class is student-centred or dominated by the teacher. Given that my study examined the learning environments of business students, it is important to review the literature related to the field of learning environments. Therefore, this section reviews literature related to: the history of the field of learning environments (Section 2.3.1); past learning environment instruments (Section 2.3.2); and research carried out in the field of learning environment (Section 2.3.3).

2.3.1   Historical background to learning environment research

The notion that there exists a classroom learning environment emerged as early as the 1930s with the theoretical foundations of Lewin (1936). It was contended, by Lewin, that the environment and its interaction with the personal characteristics of individuals, are

responsible for human behaviour. That is, both the environment and its interaction with characteristics of the individual are effective determinants of human behaviour. Building on Lewin's influential work, Murray (1938) developed a needs–press model in which the needs of an individual are either supported or frustrated by the occurrence of one or more pressures from within the individual's environment. Murray (1938) referred to the pressure that makes an individual to perform as an environmental 'press'. He also distinguished between the environmental forces that were perceived by an outside observer (alpha press), and those that were perceived by an individual within that environment (beta press). Stern, Stein and Bloom (1956) went further to clarify the alpha press as the consensual description of the environment of a particular group and the beta press as the private view of the environment of an individual. Research carried out within the field of learning environment has, on the whole, been based upon these theories.

Drawing on the work of early psychologists, the work of two people, Walberg (1968) and Trickett and Moos (1973), pioneered early research specifically related to classroom learning environments. Walberg (1968) created the Learning Environment Inventory (LEI), one of the first learning environment questionnaires to be developed in the United States, as part of the research and evaluation activities of Harvard University's Harvard Project Physics. This project was initiated to develop a national curriculum to support physics education in the United States (Walberg & Anderson, 1968). As part of the project, Walberg and Anderson effectively established that the classroom environment could be measured in a reliable and economical way using high inference measures. Thus, as part of the project, he found that the satisfaction of individual students with the environment in which they were learning was likely to enhance their learning, thereby effectively demonstrating that classroom environment variables were positive predictors of students' learning outcomes (Anderson & Walberg, 1974).

At the same time, Moos (1979) began to develop a set of social climate scales that were related to a variety of different human environment, such as psychiatric hospitals, correctional facilities, university residences and work settings (Moos, 1974). One of these environments was the classroom, which resulted in the development of the Classroom Environment Scale (CES) (Moos, 1979; Moos & Trickett, 1987).

As part of his work in human environments, Moos (1974) also delineated three general dimensions, in accordance with the work of Lewin (1936) and Murray (1938), in which he argued that there were features common to any human environment, these being personal relationships, personal growth and systems management. The personal

relationships dimension focuses on the different types and strengths of relationships in the environment. The personal growth dimension is related to the availability of opportunities for self-enhancement and personal development. The final dimension, systems management, evaluates the degree to which the environment is orderly, maintains control and is responsive to change. Table 2.1 provides a brief description of each of these dimensions. Moos' (1974) classification of the human environment continues to provide a theoretical underpinning for the development of various learning environment instruments.

Table 2.1   Dimensions of human environment

Dimension	Description
Relation	Assesses the nature and intensity of relationships in the environment
Personal Development	Assesses the degree of opportunities for personal growth and self-enhancement
System maintenance and change	Assesses the extent of responsiveness, orderliness, level of expectation and control in the environment

Over the past decade, a number of questionnaires have been adapted, cross-validated and, in many cases, translated for use in Asian countries, including Korea (Fraser & Lee, 2009), Indonesia (Fraser, Aldridge, & Adolphe, 2010), Brunei Darussalam (Fraser, 2002), Taiwan (Fraser, 2012; Liu, Zandvliet, & Ling, 2012), China (Yang, 2015), Singapore (Peer & Fraser, 2015), Thailand (Koul et al., 2012), Malaysia (Jelas, Azman, Zulnaidi, & Ahmad, 2016) and India (Smith, 2013). Other non-Western countries that have conducted learning environment research include the UAE (Khalil & Aldridge, in press; MacLeod & Fraser, 2010), Qatar (Knight, Parker, Zimmerman, & Ikhlief, 2014) and Turkey (den Brok, Telli, Cakiroglu, Taconis, & Tekkaya, 2010) Table 2.2 summarises the historical background to learning environment research, it is also shows; the name of the Authers, the research title and the research resul

Table 2.2   Historical background to learning environment research

Authors	Research Title	Result
Lewin (1936).	Psychology of success and failure	Theorised that the environment and its interaction with the personal characteristics of individuals, are responsible for human behaviour
Murray (1938)	Explorations in personality: A clinical and experimental study of fifty men of college age	Developed a needs–press model in which the needs of an individual are either supported or frustrated by the occurrence of one or more pressures from within the individual's environment
Stern, Stein & Bloom (1956)	Methods in personality assessment	Clarified the alpha press as the consensual description of the environment of a particular group and the beta press as the private view of the environment of an individual
Walberg (1968)	Structural and affective aspects of classroom climate	Created the Learning Environment Inventory (LEI), one of the first learning environment questionnaires to be developed in the United States
(Walberg & Anderson, 1968).	Classroom climate and individual learning. Journal of Educational Psychology	Established that the classroom environment could be measured in a reliable and economical way using high inference measures
Anderson & Walberg, 1974).	Evaluating educational performance: A sourcebook of methods, instruments, and examples	Demonstrated that classroom environment variables were positive predictors of students' learning outcomes
Moos (1979)	Evaluating educational environments: Procedures, measures, findings and policy implications	Developed a set of social climate scales that were related to a variety of different human environment
(Moos, 1974).	The social climate scales	Developed *a* psychiatric hospitals, correctional facilities, university residences and work settings
Moos & Trickett, 1987	Classroom Environment Scale manual (2nd edn.)	Developed the Classroom Environment Scale (CES)

2.3.2 Teacher interpersonal behaviour as part of the learning environment

The interpersonal behaviour of the teacher is an important component of the learning environment as it sets the tone or atmosphere of the relationships and activities that take place within the class. Given the inclusion of teacher interpersonal behaviour as part of this study, this section is devoted to defining interpersonal behaviour (Section 2.3.2.1) and reviewing past studies used by the questioner on teacher interpersonal behaviour (Section 2.3.2.2).

2.3.2.1 Defining interpersonal behaviour

Personality is the centre of interpersonal behaviour and an individual's personality directly influences the way in which they communicate with others. This description by Leary, in 1957, led to the development of a model of interpersonal behaviour founded on the theory that people communicate along two dimensions. The first dimension, referred to as the influence dimension, examines the degree to which a person feels that he or she is in control of the communication, measured on a scale from 'dominance' to 'submission'. The second dimension, known as the proximity dimension, examines the amount of cooperation that a person feels that there is between the people who are communicating, and is measured on a scale from 'cooperation' to 'opposition'.

2.3.2.2 The Leary Model

Leary's model of interpersonal behaviour is based on the work of the Kaiser Foundation research project (Leary, 1957, p. 62), in which a 16-dimensional model with two levels of behaviour was recommended. The Leary model assumes that interpersonal behaviour is stimulated by an individual student's need to reduce anxiety and maintain self-esteem. With two levels, the first level of behaviour is that of 'mechanisms of reflexes' and involves two-way interpersonal codes. The second level of behaviour is that of interpersonal attributes or traits.

Wubbels, Crèton, Levy and Hooymayers (1993) later reduced the 16-dimensional model to eight categories of interpersonal behaviour based on a two-dimensional system of Influence (Dominance–Submission) and Proximity (Opposition–Cooperation). The Leary model and the terms 'influence' and 'proximity' have been widely accepted. Wubbels and Levy (1991) support the universal nature of the model, with cross-national validation. **Error! Reference source not found.** (over) represents the two-dimensional

system mapping interpersonal behaviour based upon the degree of cooperation of the individuals communicating on the horizontal axis, and the degree of influence (control) of the communicator over the communication process using the vertical axis.
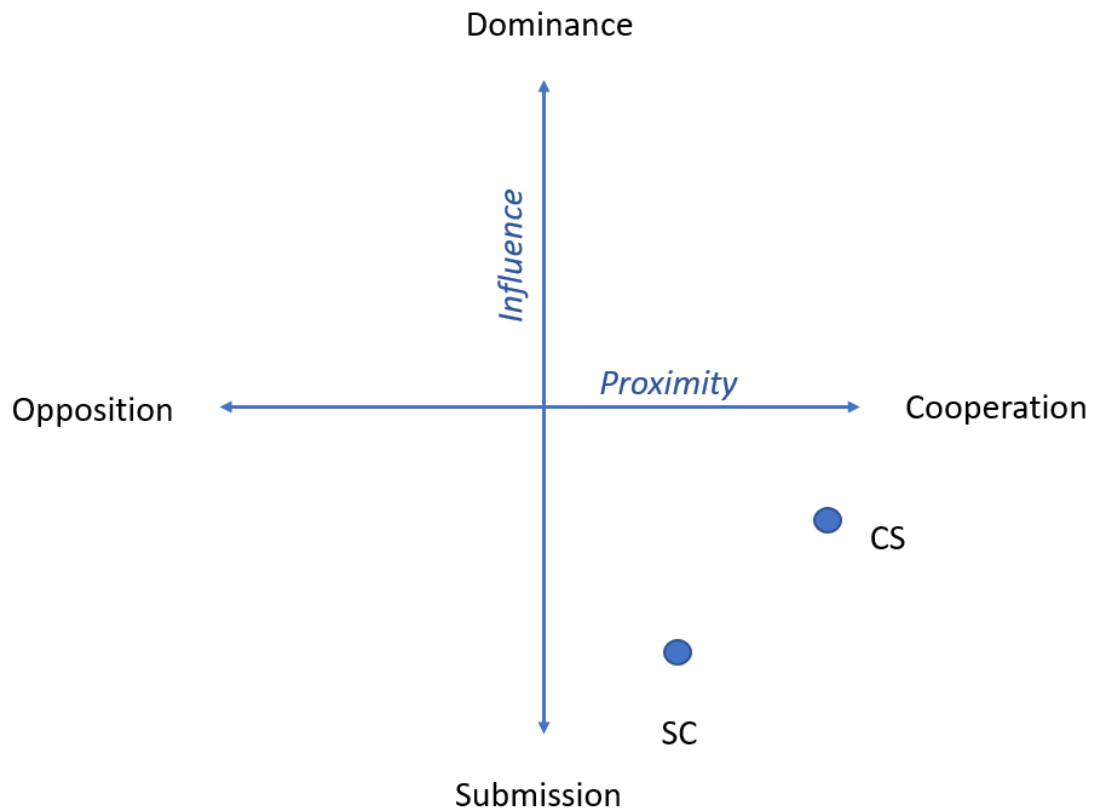
Figure 2.2   Leary's Model (Wubbels & Levy, 1993).

Wubbels, Créton and Hooymayers (1987) argued that all teacher interpersonal behaviours could be plotted in this system of coordinates. The quadrants resulting from these axes were subdivided into equal-sized octants, as shown in **Error! Reference source not found.**. The Leary model was modified and named the Model for Interpersonal Teacher Behaviour to show the perceptions of students of the behaviour of their teachers. Each interpersonal behaviour aspect is represented by a letter-pair, with the first character representing the predominance of that aspect or sector over the other. For example, CS and SC are both characterised by cooperation and submission; however, in CS, cooperation is predominant over submission, while in SC submission is predominant over cooperation. Each one of these eight sectors or behavioural aspects is labelled using appropriate terminology as indicated in **Error! Reference source not found.**3.
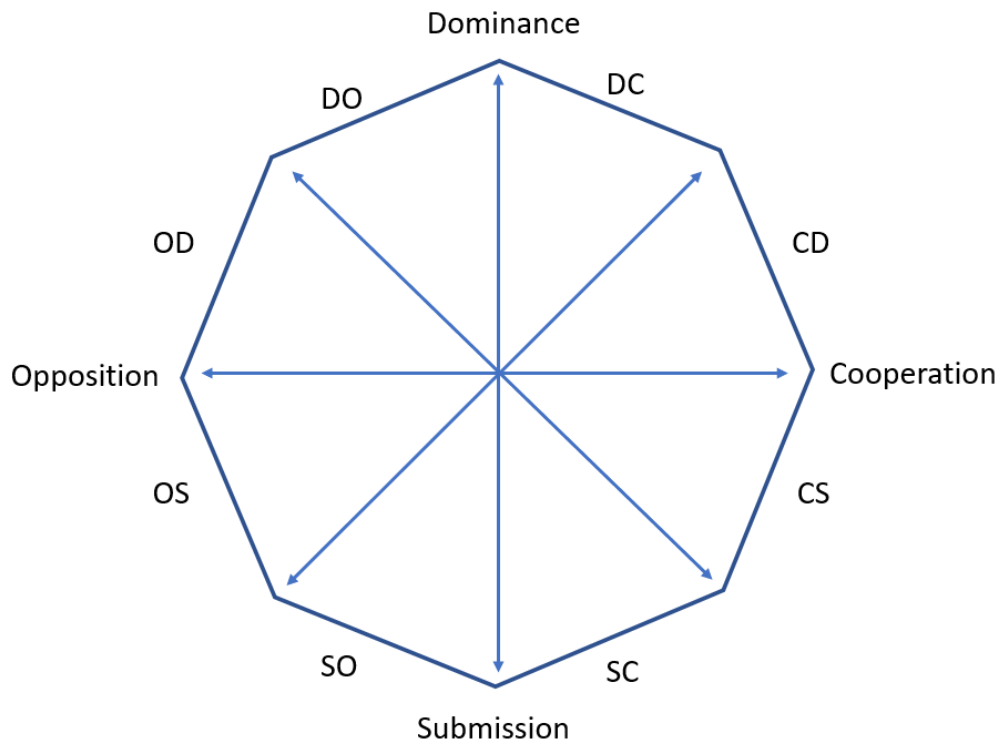
Figure 2.3   Model for Interpersonal Teacher Behaviour

2.3.2.3   Interpersonal behaviour development

In the late 1970s, at Utrecht University in the Netherlands, a research project called Education for Teachers, which investigated teacher-student interpersonal behaviour, was undertaken by Wubbels, Créton and Hooymayers (1987). Their research was based on a school induction programme for pre-service teachers. Based on their results Wubbels, Créton and Hooymayers (1992) identified that among new teachers discipline issues within the classroom were a result of interpersonal teacher behaviour, which led to the foundation of research into student teacher interpersonal behaviour

Wubbels, Créton and Holvast (1988) investigated teacher behaviour from a systems perspective. Their results showed that a change in one part of the system would lead to a change in another part of the system, and which in turn would influence the first part of the system in a circular fashion. Créton, Wubbels and Hooymayers (1993) highlight the systems perspective of communication, whereby all participants mutually influence each other. They suggest that this circular communication determines, and consists of, the behaviour within the classroom. However, should the quality of that classroom environment not meet basic conditions, the methodological aspect loses its significance (Wubbels & Levy, 1993).

2.3.3   *Instruments developed to assess the learning environment*

Over that past fifty years, numerous surveys have been developed in the field of learning environment foe a range of reasons. This section reviews and critiques 11 surveys, including some with historical importance and others that were considered for use in the present study.

Table 2.3 summarises 11 notable classroom environment instruments classified according to Moos's (1974) scheme. Table 2.3 also shows: the name of each scale in each of the instruments; the level (primary, secondary, higher education) for which each instrument is suited; the number of items contained in each scale; and the classification of each scale according to one of three dimensions, namely, Relationship Dimension, Personal Development Dimension and System Maintenance and System Change Dimension.

Given that the present study was related to a technology-rich environment, learning environment surveys that could have been incorporated reviewed. The surveys reviewed include:

- Learning Environment Inventory (LEI; Section 2.3.3.1);
- Classroom Environment Scale (CES; Section 2.3.3.2);
- Individualised Classroom Environment Questionnaire (ICEQ; Section 2.3.3.3);
- My Class Inventory (MCI; Section 2.3.3.4);
- College and University Classroom Environment Inventory (CUCEI; Section 2.3.3.5);
- Science Laboratory Environment Inventory (SLEI; Section 2.3.3.6);
- Constructivist Learning Environment Survey (CLES; Section 2.3.3.7);
- What is Happening In this Class? (WIHIC; Section 2.3.3.8);
- Computer Classroom Environment Inventory (CCEI; Section 2.3.3.9);
- Questionnaire on Teacher Interaction (QTI; Section 2.3.3.10); and
- Technology-Rich Outcome-Focused Learning Environment Inventory (TROFLEI; Section 2.3.3.11).

Table 2.3   Overview of Scales Contained in Selected Classroom Environment Instruments

Instrument	Level	Item per Scale	Relationship Dimension	Personal Development Dimension	System Maintenance & Change Dimensions
Learning Environment Inventory (LEI)	Secondary	7	Cohesiveness Apathy Frication Favouritism Cliqueness Satisfaction	Speed Difficulty Competitiveness	Diversity Formality Goal Direction Disorganization Material Environment Democracy
Classroom Environment Scale (CES)	Secondary	10	Involvement Affiliation Teacher Support	Task Orientation Competition	Order & Organization Rule Clarity Teacher Control Innovation
Individual Classroom Environment Questionnaire (ICEQ)	Secondary	10	Personalization Participation	Independence Investigation	Differentiation Material Environment
My Class Inventory (MCI)	Elementary	6-9	Cohesiveness Frication Satisfaction	Difficulty Competitiveness	
College and University Classroom Environment Inventory (CUCEI)	Higher Education	7	Personalization Involvement Cohesiveness Satisfaction	Task Orientation	Innovation Individualization
Science Laboratory Environment Inventory (SLEI)	Upper Secondary	7	Cohesiveness	Open-Endedness Integration	Rule Clarity Material Environment
Constructivists Learning Environment Survey(CLES)	Secondary	4	Gender Equity	Investigation Resource Adequacy	Innovation
What is happening in this classroom (WIHIC)	Secondary	8	Student Cohesiveness Teacher Support Involvement	Investigation Task Orientation Cooperation	Equity
Computer Classroom Environment Inventory (CCEI)	Secondary	5	Satisfaction	Investigation Open Endedness	Material Environment Organization
Questionnaire on Teacher Interaction (QTI)	Secondary	8	Leadership Helping/Friendly Understanding Student Responsibility Uncertainty Dissatisfaction Admonishment Strictness		
Technology-Rich Outcome-Focused Learning Environment Inventory (TROFLEI)	Secondary	10	Student Cohesiveness Teacher Support Involvement	Task Orientation Investigation Collaboration	Equity Young Adult Ethos Differentiation Computer Usage

This table has been modified from Fraser (2012, P. 1196) with permission.

2.3.3.1   Learning Environment Inventory (LEI)

The Learning Environment Inventory (LEI) was developed in the 1960s as part of the research and evaluation activities of the Harvard Project Physics (Fraser, Anderson, & Walberg, 1982; Walberg & Anderson, 1968). The final version of the LEI had a total of 105 statements, with seven items in each of 15 scales: Cohesiveness, Friction, Favouritism, Cliqueness, Satisfaction, Apathy, Speed, Difficulty, Competitiveness, Diversity, Formality, Material Environment, Goal Direction, Disorganisation, and Democracy. Two example items of the LEI are 'All students know each other very well' (for the Cohesiveness scale) and 'The pace of the class is rushed' (for the Speed scale). The items in each scale were responded to using four responses, which express the degree of agreement or disagreement: strongly disagree, disagree, agree and strongly agree.

Although evidence to support the reliability and validity of the LEI has been reported, in terms of internal consistency reliability and discriminant validity (see, for example, Fraser, Anderson and Walberg, 1982), the factor structure of the LEI was never suitably established. In addition, even though more recent studies still use some of the LEI scales, most of these were developed for use with more traditional, teacher-centred classroom settings. Given the length of the survey, in addition to factors related to the psychometric properties of the LEI, this survey was not suitable for the present study.

2.3.3.2   Classroom Environment Scale (CES)

The CES was originally developed with 242 items distributed between 13 dimensions of the learning environment (Trickett & Moos, 1973; Moos & Trickett, 1974). The refined final version involved nine scales with 10 items in each scale. The scales were: Involvement, Affiliation, Teacher Support, Task Orientation, Competition, Order and Organisation, Rule Clarity, Teacher Control, and Innovation. Some example items drawn from the CES are: 'Students daydream a lot in this class' (for the Involvement scale), 'Students in this class get to know each other really well' (for the Affiliation scale) and 'The teacher takes a personal interest in students' (for the Teacher Support scale). In all, approximately half of the items were reverse-scored – that is, they were considered to be negative items. The CES has two forms, actual and preferred. The actual form of the CES seeks to examine students' perceptions of what is currently happening in their learning environments while the preferred form seeks to examine what students would prefer to happen in the learning environment.

As with the LEI, the factor structure of the CES has not been established. In addition to this, the CES has a true/false response format, which has been criticised for forcing student to respond to a dichotomous statement that could be construed as right or wrong. Again, as with the LEI, even though some of the CES scales are relevant today, the majority are not suited to student-centred classrooms.

2.3.3.3   Individualised Classroom Environment Questionnaire (ICEQ)

The ICEQ was developed by Rentoul and Fraser (1979) to provide information that could differ between individualised classrooms and more traditional ones. While the original version of the ICEQ involved five scales with 15 items in each scale (Rentoul & Fraser, 1979), a shorter version was later developed that had 50 items, with ten items in each of the scales. The scales of the ICEQ are: Personalisation, Participation, Independence, Investigation and Differentiation. In all cases, the items were responded to using a five-point frequency-response format that ranged from 'almost never' to 'very often'. As with the CES, about half of the items were negative, meaning that for these items the scoring direction was reversed. Two example items are 'The teacher considers students' feelings' (for the Personalisation scale) and 'Different students use different books, equipment and materials' (for the Differentiation scale).

While the ICEQ provides scales that are of contemporary relevance, this survey was not selected because it has not been widely-used in non-Western contexts.

2.3.3.4   My Class Inventory (MCI)

The MCI was the first learning environment survey to be developed specifically for use at the primary school level. Since its development (Fisher & Fraser, 1981; Fraser, Anderson, & Walberg, 1982), however, it has been successfully used with junior high and even secondary school students with limited reading ability (Fraser et al., 1982). The MCI is essentially a shortened version of the LEI; the items are simpler and easier to read, taking into consideration the limited attention span and possible fatigue of primary-aged students. As such, the MCI includes five of the original LEI scales and has a two-point response format (Yes−No). In more recent versions of the MCI, the response format was successfully changed to a three-point response format consisting of seldom, sometimes, and most of the time (see, for example, Goh, Young & Fraser, 1995). To reduce error in transferring responses, students' answers are given on the questionnaire itself instead of on a separate response sheet. The most recent version of the MCI has 38 items in the five

scales of Cohesiveness, Friction, Satisfaction, Difficulty and Competitiveness. Two sample items are 'Children are always fighting with each other' (for the Friction scale) and 'Children seem to like the class' (for the Satisfaction scale). As with other surveys of this time, the MCI included negative items.

There have been studies that have provided support for the reliability of the MCI (Majeed, Fraser, & Aldridge, 2002; Scott Houston, Fraser, & Ledbetter, 2008; Sink & Spencer, 2005). However, there has also been some criticism of the MCI – for example, over the inclusion of a satisfaction scale, which is not considered to be part of the learning environment (Majeed, Fraser & Aldridge, 2002). Also, as with the CES, the use of the Yes–No response format is seen as problematic as it forces a response. Given these problems, in addition to the age of the students for whom the survey was developed, the MCI was not considered to be suitable for use in this study.

2.3.3.5 *College and University Classroom Environment Inventory (CUCEI)*

The CUCEI was included in this review as, unlike the previous surveys, it was developed for use at the tertiary level (Fraser & Treagust, 1986; Fraser, Treagust & Dennis, 1986). The CUCEI was made up of scales adapted from high school-level surveys such as the LEI, CES and ICEQ. The CUCEI is made up of seven scales, each of which includes seven items. The scales are: Personalisation, Involvement, Student Cohesiveness, Satisfaction, Task Orientation, Innovation and Individualisation. Each item is responded to using four responses: strongly agree, agree, disagree, and strongly disagree. As with the previous surveys, about half of the items in the CUCEI are negatively worded and, therefore, scored in reverse. Two example items are 'Activities in this class are clearly and carefully planned' (for the Task Orientation scale) and 'Teaching approaches allow students to proceed at their own pace' (for the Individualisation scale).

The CUCEI has been used in a range of studies and a range of different setting. It has been used to examine the learning environments created in hospital-based nursing education (Fisher & Parkinson, 1998). Despite the successful use of the CUCEI (see, for example, Rickards, 1998; Fraser, Williamson, & Tobin, 1987; Nair & Fisher, 2000), there have been other studies that have not reported favourably on the psychometric properties of the CUCEI (Logan, Crump, & Rennie, 2006); in this study, the CUCEI was not found to be as reliable as expected. Given the underlying problems, CUCEI was not considered to be suitable option for use in this study.

2.3.3.6 Science Laboratory Environment Inventory (SLEI)

The SLEI was developed specifically to assess students' perceptions of the science laboratory learning environment (Fraser, Giddings, & McRobbie, 1995; Fraser & McRobbie, 1995; Fraser, McRobbie, & Giddings, 1993). Originally, the SLEI was developed with 72 items in seven scales, these being: Teacher Support, Student Cohesiveness, Open-Endedness, Integration, Organisation, Rule Clarity and Material Environment. A refined version was developed from this with 35 items in each of five scales: Student Cohesiveness, Open-Endedness, Integration, Rule Clarity, and Material Environment. Each of the items is responded to using a five-point scale: almost never, seldom, sometimes, often, and very often. As with the CES, the SLEI was developed to include two forms, actual and preferred (Fraser, Giddings, & McRobbie, 1995).

The SLEI was initially field-tested with a sample of 4643 students in 225 classes across six countries – the USA, Canada, England, Israel, Australia and Nigeria – and showed positive results (Fraser & McRobbie, 1995). The SLEI was later used in Australia (Fisher, Henderson, & Fraser, 1997), Singapore (Wong & Fraser, 1995; Quek, Wong & Fraser, 2005b); the USA (Lightburn & Fraser, 2007); and Korea (Fraser & Lee, 2009). Findings from data analysis revealed that the SLEI was valid, reliable and useful within the contexts of these studies.

Despite the reliability and validity of the SLEI when used in numerous different countries, the survey was specifically developed to assess laboratory classes. Given that the study reported in this thesis examines tertiary-level business classrooms, the SLEI was not considered to be suitable.

2.3.3.7 Constructivist Learning Environment Survey (CLES)

The CLES was developed to examine students' perceptions of the extent to which the learning environment of a classroom is consistent with a constructivist epistemology (Taylor, Fraser & Fisher, 1997). The intention was for the data collected using the CLES to be used by teachers to reflect on their epistemological assumptions and to 'reshape' their practice. The CLES has a total of 36 items in each of five scales: Personal Relevance, Uncertainty, Student Negotiation, Shared Control and Critical Voice. The items in each scale are responded to using a five-point frequency scale ranging from almost never to almost always.

A more recent version of the CLES, known as the CLES II, provides a shorter version of the instrument, developed by Johnson and McClure (2002). This version includes 20 items in the same five scales. All negatively worded items were removed. Still another form of the CLES was developed by Nix, Fraser and Ledbetter (2005) and included a Comparative Student version that students could use to compare classes. This version, called the CLES-CS, was validated with 1079 students in terms of its *a priori* structure, internal consistency reliability, discriminant validity and ability to distinguish between classes and groups.

The CLES has been used in a range of countries around the world: South Africa (Aldridge, Fraser, & Sebela, 2004); the USA (Ogbuehi & Fraser, 2007); Korea (Oh & Yager, 2004); Hong Kong (Kwan & Wong, 2014); and Iran (Ebrahimi, 2015). However, given that the present study does not examine these specific elements of constructivism, this instrument was not considered.

2.3.3.8   *What is Happening In this Class? (WIHIC)*

The What Is Happening In this Class (WIHIC) questionnaire was developed by Fraser, Fisher and McRobbie (1996) to assess contemporary science classrooms. The WIHIC includes modified versions of scales drawn from a range of existing learning environment surveys as well as scales developed to assess more contemporary concerns (Fraser, 2002). The original version had 90 items in each of nine scales; however, this version was refined by Aldridge, Fraser and Huang (1999) to include seven scales, these being: Student Cohesiveness, Teacher Support, Involvement, Investigation, Task Orientation, Cooperation, and Equity. It is this version that has been used in more recent studies and modified to make it applicable to a range of different subjects. The items of the WIHIC are responded to using a five-point frequency scale of almost never, seldom, sometimes, often, and almost always.

Since its development, the WIHIC has successfully used around the world, including in India (Koul & Fisher, 2005), Australia (Aldridge, Fraser, & Huang, 1999; Velayutham et al., 2013; Velayutham & Aldridge, 2013; Velayutham et al., 2011, 2012), Australia and Indonesia (Fraser, Aldridge, & Adolphe, 2010), Indonesia (Soebari & Aldridge, 2015); Jordan (Alzubaidi, Aldridge & Khine, 2016), Singapore (Peer & Fraser, 2015), Turkey (den Brok et al., 2010), the UAE (Afari et al., 2013; Khalil & Aldridge, in press; MacLeod & Fraser, 2010), Uganda (Opolot-Okurut, 2010) and the USA (Adamski, Fraser, & Peiro,

2013; Fraser, 2013; Robinson & Fraser, 2013; Taylor & Fraser, 2013; Zaragoza & Fraser, 2016). The WIHIC has also been translated into numerous languages, including Bahasa Indonesian (Fraser, Aldridge, & Adolphe, 2010; Soebari & Aldridge, 2015, Spanish (Adamski et al., 2013; Robinson & Fraser, 2013), Greek (Giallousi, Gialamas, Spyrellis, & Pavlaton, 2010) and Arabic (Afari et al., 2013; Afari et al., 2013; Alzubaidi et al., 2016; Khalil & Aldridge, in press; MacLeod & Fraser, 2010). In addition to these studies, in a well-known 2003 study by Dorman (which included a sample from three countries) confirmatory factor analysis was used to support the seven-scale *a priori* structure. In this study, the three grouping variables (country, grade level and student gender) substantiated invariant factor structures through the use of multi-sample analyses within structural equation modelling.

Although the WIHIC was not selected directly for use in this study, the development of the TROFLEI (which was selected) drew heavily on the WIHIC scales.

2.3.3.9 Technology-Rich Outcome-Focused Learning Environment Inventory (TROFLEI)

The TROFLEI was developed by Aldridge and Fraser (2003) to assess students' perceptions of their current and preferred classroom learning environments. The development of the TROFLEI drew largely on the WIHIC questionnaire, described above. The TROFLEI consisted of 80 items assigned to 10 scales (eight items per scale), these being: Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Collaboration, Equity, Differentiation, Computer Usage and Young Adult Ethos.

Support for the reliability of the TROFLIE has been provided in a number of studies. For example, a study carried out in Australia with 2317 students in 166 classrooms provided evidence to support the factor structure and internal consistency (Aldridge & Fraser, 2008). Similar findings have been reported in other studies (see, for example, Aldridge & Fraser, 2000; Chionh & Fraser, 2009). In another study by Aldridge, Dorman and Fraser (2004), multi-trait multi-method modelling, with a sample of 1249 students from two states in Australia, supported the construct validity of the TROFLEI.

Given the evidence to support the reliability of the TROFLEI and the applicability of its scales to college-level business classrooms, it was considered to be a suitable choice. Further, given the reliability and validity of WIHIC (as described above) across numerous

subjects and countries, and the fact that the TROFLEI included many of these scales, it was considered to be a good choice for this study. Chapter 3 provides more information about the TROFLEI.

2.3.3.10 Questionnaire on Teacher Interaction (QTI)

The *Questionnaire on Teacher Interaction* (QTI) was developed by Wubbels, Créton and Hooymayers (1987) to assess the interpersonal relationships between teachers and students (see also Wubbels & Brekelmans, 1998; Wubbels & Levy, 1993). The QTI was based on Leary's model of interpersonal behaviour, which is described in Section 2.3.2.2. The QTI assesses students' perceptions of eight behaviour scales: Leadership, Helping/Friendly, Understanding, Student Responsibility, Uncertainty, Dissatisfaction, Admonishment, and Strictness, each of which is related to a sector in Leary's model. In order to assess perception on eight behaviour scales a five-point response scale is used, ranging from never to always.

As the QTI was developed in the Netherlands, it was originally available only in Dutch (Wubbels, Créton, Levy, & Hooymayers, 1993). In the 1980s, Wubbels and Levy (Wubbels, Créton, Levy, & Hooymayers, 1993) developed an American version of the QTI, in which they translated the QTI into English, simplified the language and reduced the number of items. This version consisted of 77 items within the eight scales, with nine to 11 items in each of the eight scales (Wubbels & Levy, 1993). The American version was later adapted for use in Australia by Fisher, Henderson and Fraser (1995). This version of the QTI was further reduced to eight items in each of the eight scales, providing a total of 64 items. This version of the QTI has subsequently been used in Australia (Fisher, Henderson, & Fraser, 1995), Singapore (Goh & Fraser, 1996), Brunei (Scott & Fisher, 2003), Korea (Kim, Fisher, & Fraser, 2000), Indonesia (Maulana, Opdenakker, den Brok, & Bosker, 2012), and Hong Kong (Sivan, Chan, & Kwan, 2014). Later, a primary school version was adapted for use with younger students by Goh and Fraser (1996). In this version, the wording of individual items was simplified and the number of items in each scale was reduced to six, providing a shorter version with 48 items.

The QTI was selected for use in this study. Its unique measurement of teacher interpersonal behaviour and applicability across a range of countries made it suitable for use in the present study.

2.3.4   *Past learning environment research*

Research in the field of learning environments has been prolific and there are at least 12 lines of research that have been reported (as noted by Fraser, 2012). These lines of research include: relationships between a range of student outcomes and the classroom environment; the use of classroom environment dimensions as criterion variables when evaluating innovations in education; teachers' attempts to improve their classroom learning environments; differences between the perceptions of students' and teachers' actual and preferred environment; combining quantitative and qualitative methods; school psychology; links between educational environments; cross-national studies; typologies of classroom environments and transition between different levels of schooling; studies of actual–preferred fit, to examine whether students perform better when their preferred environment is more aligned to the actual environment; exploring learning environment ideas into teacher education; and links between home learning environment and school learning environment.

More recent research has further extended the field of learning environment studies, investigating such areas as: student participation in designing the learning environment (Mäkelä & Helfenstein, 2016; Mäkelä, Helfenstein, Lerkkanen, & Poikkeus, 2018; McCallum, Schultz, Sellke, & Spartz, 2015); the impact of the whole school learning environment on students' wellbeing (Aldridge, Ala'i, & Fraser, 2016; Aldridge, McChesney, & Afari, 2017; Kyriakides & Creemers, 2016; Read, Aldridge, Ala'i, Fraser, & Fozdar, 2015; Riekie, Aldridge, & Afari, 2017); teacher practices and the learning environment (Kwitonda, 2017); validation of learning environment questionnaires in other countries (De Juan et al., 2016; Koh & Fraser, 2014; Passini et al., 2015; Sun, Mainhard, & Wubbels, 2018); development of new learning environment questionnaires (Elvira, Beausaert, Segers, Imants, & Dankbaar, 2016; Hartley & Treagust, 2014); and the impact of modern learning environments (Sha, Looi, Chen, & Zhang, 2012).

This section reviews literature related to three of these lines of learning environment research, each of which was pertinent to the aims of the study reported in this thesis: associations between student outcomes and environment (Section 2.3.4.1); differences between students' and teachers' perceptions of the environment (Section 2.3.4.2); and determinants of classroom environment (Section 2.3.4.3).

2.3.4.1 Learning environment – outcome associations

Numerous studies have found there to be strong and consistent relationships between perceptions of the learning environment. These studies have been carried out in countries around the world, including Australia (Dorman & Fraser, 2009; Fisher & Fraser, 1983), Singapore (Goh, Young, & Fraser 1995), Brunei (Majeed, Fraser, & Aldridge 2002), Turkey (Telli, den Brok, & Cakiroglu 2010), South Africa (Aldridge, Fraser, & Sebela 2004), the US (Nix, Fraser, & Ledbetter 2005), Uganda (Opolot-Okurut 2010), the UAE (Afari, Aldridge, Fraser & Khine, 2013); and the US (Robinson & Fraser, 2013; Helding & Fraser 2013; Rita & Martin -Dunlop, 2011; Sirrakos & Fraser, 2017).

Strong, positive relationships between the learning environment and student outcomes have also been found across a range of different subject areas and across different school levels. For example, recent studies that have investigated associations between the learning environment and different outcomes in fields including: mathematics (Afari et al., 2013; Ogbuehi & Fraser, 2007); mathematics and science (Fraser & Raaflaub, 2013), geography and mathematics (Chionh & Fraser, 2009); chemistry laboratory (Wong & Fraser 1996); and general science (Aldridge et al., 1999; Aldridge & Fraser, 2000; den Brok, Fisher, & Scott, 2005; Kerr, Fisher, Yaxley, & Fraser, 2006; Koul & Fisher, 2005; Lay & Khoo, 2012; Martin-Dunlop & Fraser, 2008; Peer & Fraser, 2015; Shadreck, 2012; Telli, Cakiroglu, & den Brok, 2006; Wolf & Fraser, 2008). These strong and consistent findings across a range of subjects suggest that students' perceptions of the learning environment could be pivotal to student success at school.

The relationship between perceptions of the learning environment and students' attitudes has been examined across a range of studies, all of which have found that the learning environment has a direct effect on these attitudinal outcomes (see, for example, Kenar, Balci, & Gokalp, 2013; Mink & Fraser, 2005; Teh & Fraser, 1994; Telli, den Brok, & Cakiroglu 2010). Of relevance to this study are past studies that have examined the relationships between the students' perceptions of their learning environment and their self-reports of motivation. Consistent, positive relationships have been found across various subjects, including science (see, for example, Barak, Ashkar, & Dori, 2011; Koul, Roy, & Lerdpornkulrat, 2012; Nolen, 2003; Velayutham & Aldridge, 2013) and mathematics (Gilbert et al., 2014; Opolot-Okurut, 2010). In all of these cases, the relationships between the learning environment and student motivation, were generally

positive, indicating that improving the learning environment is likely to enhance students' motivation.

Another line of study of relevance to this study is the examination of the impact of students' perceptions of the learning environment on self-reports of self-efficacy. In studies carried out around the world, the findings suggest that the learning environment does indeed have an impact on students' self-efficacy. These reports include studies carried out in India (Gupta & Fisher, 2012), Canada (Ferguson & Dorman, 2001), the UAE (Afari et al., 2013), Australia and Britain (Dorman & Adams, 2004) and Australia (Dorman, 2001; Kerr et al., 2006; Velayutham, Aldridge, & Fraser, 2011). Generally, studies assessing this domain have reported strong and positive associations between students' perceptions of the learning environment and students' self-efficacy in relation to learning.

A consistent link between the learning environment/teacher interpersonal behaviour and students outcomes has been shown in studies in India (Koul & Fisher, 2005), Korea (Kim, Fisher, & Fraser, 2000), Australia (Fisher, Henderson, & Fraser, 1995) and Singapore (Goh, Young, & Fraser, 1995).

The present study built on and extended these studies by using, for the first time, a learning environment instrument to examine determinants of business learning at the college level in UAE and how these impacted students' outcomes related to motivation and engagement.

2.3.4.2 *Differences between students' and teachers' perceptions of actual and preferred environments*

The study reported in this thesis examined whether differences exist between students' and teachers' perceptions of the learning environment in business courses in the UAE. It was considered pertinent, therefore, to review past studies that had also examined these differences.

A line of studies has examined differences between the actual environment and that preferred by students or teachers. Overwhelmingly, these past studies have reported statistically significant differences between the learning environments perceived by students compared to the environment that they would prefer. The emerging pattern suggests that students would prefer a learning environment that was more favourable than

the one they perceive, with similar findings replicated in studies in the USA (Allen & Fraser, 2007), Australia (Fraser & McRobbie, 1995; Watt, 2010), Singapore (Macleod & Fraser, 2010), The Netherlands (Wubbels, Brekelmans, & Hooymayers, 1991), the UAE (Macleod & Fraser, 2010), South Africa (Aldridge, Fraser, & Ntuli, 2009) and Taiwan (Lai et al., 2015).

Past studies that have compared teacher and student perceptions of the same classroom learning environment are reported by Fisher and Fraser (1983) and Wubbels (1993). In most studies (see, for example, Watt, 2013), teachers' perceptions of the classroom environment were found to be more positive than those of the students.

In another study, by Khine and Fisher (2002), comparisons of students perceptions were made across cultures. In this study, the QTI was used to examine the perceptions of the teachers and the students and whether they were different across cultural backgrounds. The findings reported that teachers from different cultural backgrounds created different types of learning environments and that the students perceived a more favourable interpersonal relationship with Western teachers than with Asian teachers.

Despite the wide range of studies that have examined both actual and preferred differences in the learning environment and differences between the perceptions of teachers and students, to the best of the researcher's knowledge none have been carried out in the UAE at the tertiary level. Therefore, this study extended these past studies to examine whether similar patterns occur in an Arabic context at the tertiary level.

2.3.4.3 Determinants of classroom environment

Past research has examined a range of determinants of the learning environment, including factors such as teacher interpersonal behaviour (Goh & Fraser, 1996), gender (Peer & Fraser, 2015; Taylor & Fraser, 2012), class size (Anderson & Walberg, 1972), subject streams (Quek, Wong and Fraser, 2005a, 2005b; Fraser & Lee, 2009; Fraser & Lee, 2009), and year level (Dieso & Fraser, 2019; Peer & Fraser, 2015; Telli, den Brok, Tekkaya & Cakiroglu, 2009). This section provides a brief review of literature related to two determinants, gender and year level.

Although gender differences did not form part of this study (as the data was collected in an all-female campus) it is relevant to review literature in this area as it is one of the most researched determinants of the learning environment. The research in this area has been

prolific with many studies reporting differences on the perceptions of male and female students (Fraser, 2015, 2018). Ongoing concerns with respect to gender differences in students' learning in a range of subjects (most notably science) has been of concern for many years (see for example Speering & Rennie, 1996). This situation has also been found to exist in more recent research that has examined the learning environment (see for example, Peer & Fraser, 2015; Taylor & Fraser, 2012; Telli, den Brok, Tekkaya & Cakiroglu, 2009). Of note, is that past research has consistently reported that female students view the learning environment more favourably than their male counterparts across different levels of schooling (see for example, Fraser, Giddings & McRobbie, 1995; Ferguson & Fraser, 1998; Fraser & Raaflaub, 2013; Khoo & Fraser, 2008; Kim, Fisher & Fraser, 2000; Peer & Fraser, 2015).

Of relevance to this study is past research that has examined differences in students' perceptions with respect to grade level as a determinant. There have been a number of studies that have examined the learning environment perceptions of students' who are transitioning from primary school to high school (Dieso & Fraser, 2019; Ferguson & Fraser, 1998; Fraser, 2012). These transition studies have reported a decline in students' perceptions of the learning environment as they move from one level of schooling to the other. Other studies have examined differences in students' perceptions within one level of schooling. For example, Kim, Fisher and Fraser (2000), Peer and Fraser (2015), and Telli, den Brok, Tekkaya and Cakiroglu (2009) examined classes at the high school level. These studies, regardless of level of schooling, generally reported a decline in the learning environment perceptions of students as they move to higher grade levels.

Of relevance to the study reported in this thesis, which was carried out at the tertiary level, is a study by Tulloch (2011) who examined grade level differences in students' learning environment perceptions at the college level. Findings in Tulloch's (2011) study indicated that, unlike studies carried out at the school level, at the tertiary level, the older students had more positive learning environment perceptions than their younger counterparts. To the best of the researcher's knowledge, to date, no studies have examined changes in students' perceptions of the learning environment at the tertiary level in the UAE. Therefore, this study, carried out in tertiary level business classes in the UAE, built on and extended these past studies by examining changes in students' perceptions as they moved from the first year to the third year of their course.

2.4 Students' motivation

Motivation in education has been examined by researchers, educators and psychologists for over thirty years; see, for example, Gardner and Lambert (1972) and Kaplan, Lichtinger and Gorodetsky (2009). In order to facilitate self-regulated learning (see Section 2.5), it is important for educators to first understand students' motivational beliefs. Motivation is a strong personal determinant according to social cognitive theory. As such, it has been assessed in the present study. Therefore, this section is devoted to first, defining motivation (Section 2.4.1) and the various constructs associated with it, then reviewing the available instruments developed to assess motivation (Section 2.4.2). Finally, the section reviews past literature related to research relevant to this research.

2.4.1 Defining motivation

Motivation is "one of the most researched constructs in education" (Alzubaidi et al., 2016, p. 2). The two dominant concepts that have driven much research in motivation have been self-efficacy and self-concept beliefs (DiBenedetto & Schunk, 2018; Pajares, 2001; Pajares & Schunk, 2001a, 2001b). This section reviews three constructs considered to be central to motivation, as they were examined in the study reported in this thesis: learning goal orientation (described in Section 2.4.1.1), task value (described in Section 2.4.1.2) and self-efficacy (described in Section 2.4.1.3). All of these aspects of motivation have been found in past research to be related to students' adaptive motivational beliefs, and each plays a part in students' successful engagement in self-regulated learning (Zimmerman, 2002).

2.4.1.1 Learning goal orientation

Achievement goal theory provides important theoretical views that serve to explain why students choose to engage in tasks (Pintrich, 2000), with motivation provided by orientation towards a goal. Over the last twenty years, achievement goal theory (related to learning goal orientation) has become a prominent construct in theories of the influences on student motivation (Kaplan & Maehr, 2007; Wigfield & Cambria, 2010). This theory provides a framework that has helped researchers to better understand how to improve students' adaptive patterns of learning engagement (Kaplan & Maehr, 2007).

According to achievement goal theory, there are two chief types of goal orientation. First, there is learning goal orientation. This type of goal orientation is about the reason why,

or the purpose, students choose to develop competence to focus on their learning, understanding, and mastery of tasks. Second, there is performance goal orientation. This type of goal orientation is about why a student would choose to demonstrate competence, particularly in terms of how they deal with or manage how others perceive them (Ames, 1992). According to Elliot and Murayama (2008, p. 614), 'a goal is conceptualized as an aim one is committed to that serves as a guide for future behaviour'. Positive cognitive and affective learning outcomes regarding student motivation situated within a learning goal orientation have been widely accepted – for example, deeper processing strategies and purpose for learning (Froiland, 2018); response to feedback (Jang et al., 2015); cultural influences on goal orientations (Unger-Aviram & Erez, 2016); and parental influences on goal orientations (Jang et al., 2015).

2.4.1.2 *Task value*

One of the major frameworks that motivates achievement is the expectancy-value theory. Eccles (2005) and Wigfield and Cambria (2010) highlight the central role of students' beliefs about the value of an academic task in structuring students' motivation to learn. What the 'task value' definition is based on is the nature of different tasks and how this nature impacts students to do the tasks (Eccles, 2005; Wigfield & Eccles, 1992). The intrinsic value, the first component of task value, to emerge in an individual was assumed by Wigfield, Tonks & Klauda (2009). Attainment value, which is associated with the individual's sense of self, develops and utility value of different tasks takes shape (Wigfield & Cambria, 2010) during the elementary school years.

The expectancy value framework has been used to assess: how procrastination versus effort and persistence is influenced by levels of self-efficacy and task value in college students (Wu & Fan, 2017); parental influences in predicting achievement and achievement choices as a result of expectancies of success (Harackiewicz, Rozek, Hulleman, & Hyde, 2012; Rozek, Hyde, Svoboda, Hulleman, & Harackiewicz, 2015; Svoboda, Rozek, Hyde, Harackiewicz, & Destin, 2016; Taskinen, Dietrich, & Kracke, 2015); and changes in motivational trajectories over time towards science (Kosovich, Flake, & Hulleman, 2017; Phelan, Ing, Nylund-Gibson, & Brown, 2017; Simpkins, Davis-Kean, & Eccles, 2006; Wang, Chow, Degol, & Eccles, 2017). Task value is an essential element of motivation towards learning because if there is little value perceived in a learning task, students are unlikely to expend effort on learning that task (Andrade & Heritage, 2017, 2018).

Research findings shows that task value is affected by a range of different influences, such as psychological, social, contextual and cultural factors (Eccles, 1987, 1993, 2005; Eccles & Wigfield, 1995; Meece et al., 1990; Wigfield, 1994; Wigfield & Eccles, 1992, 2000, 2002). The findings of past research indicate that the contextual organisation of classrooms and schools (for example, the structures used to reward students, the nature of the assessment tasks, and whether collaboration or decision making is emphasised) is likely to impact on the development of students' task value (Wigfield, Eccles, & Rodriguez, 1998). It is acknowledged, however that there is limited information about how these contextual factors impact on students' task values. Therefore, this study, which investigated psychosocial elements and teacher interpersonal behaviour, helps to extend these past findings and examines more closely specific contextual elements that influence task value.

2.4.1.3 Self-efficacy

Bandura (1977) proposed a theory about self-confidence as having a significant impact on student behaviour. The belief in one's abilities to achieve a goal or an outcome is called self-efficacy. According to Bandura (1997), it determines how people feel, think, motivate themselves and act. If students believe that they can achieve the desired results, then they are more likely to have incentives to learn, according to Bandura's (1986) social cognitive theory. Studies have investigated self-efficacy in a variety of contexts, such as parental influences on self-efficacy (Sha, Schunn, Bathgate, & Ben-Eliyahu, 2016; Zimmerman, Bandura, & Martinez-Pons, 1992), responding to challenges and gaining new knowledge (Komarraju & Nadler, 2013) and cultural differences in self-efficacy beliefs (Meissel & Rubie-Davies, 2016).

research findings had produced evidence that students' self-efficacy beliefs are related to affective outcome and positive cognitive attributes – such as, self-efficacy is positively related to persistence (Lyman, Prentice-Dunn, Wilson, & Bonfilio, 1984). Academic efficacy is a strong positive predictor of academic achievement. Students' self-efficacy beliefs are also positively related to students' motivational beliefs – for example, academic motivation (Multon, Brown, & Lent, 1991).

Other research concluded that students' self-efficacy beliefs in a specific subject area are positively related to their academic motivation and performance outcomes in that particular domain (Pajares & Valiante, 1997; Britner & Pajares, 2001; Shell, Colvin, &

Bruning, 1995). Studies have found differences in self-efficacy beliefs in a variety of contexts. For example, Meissel and Rubie-Davies (2016) found differences in motivation levels and self-efficacy beliefs between different cultures in New Zealand, with Māori and Polynesian middle-school students more affected by their self-efficacy beliefs than their New Zealand European peers. Bong (2004) found that self-efficacy levels in students varied according to subject, with differences in self-efficacy across multiple learning domains in a public all-girls' high school in Korea. Leonard et al. (2016) found that students' self-efficacy was either positively or negatively affected by different learning environments. Kim, Wang, Ahn and Bong (2015) found differing self-efficacy profiles between male and female English-language learners at a Korean university.

Hushman and Marley (2015) showed that direct instruction, in particular, had a positive influence on students' self-efficacy. Bartimote-Aufflick, Bridgeman, Walker, Sharma and Smith (2016) showed a strong association between self-efficacy and science learning outcomes with university students

Through helping learners to expect a benefit from taking part in an educational experience, we often motivate them. The effectiveness of technology-rich learning environments, as in tertiary level colleges in the UAE, in promoting student motivation was examined in the current study.

Students are more likely to show positive motivation when their school settings emphasises mastery, improving skills, understanding and knowledge (Meece, Anderman, & Anderman, 2006). Past research suggests that that goal orientation, self-efficacy and task value contribute to students' motivation to learning. The research reported in this thesis examined whether the learning environment, created in college-level business classrooms influences students' motivation.

2.4.2   *Instrument developed to assess motivation*

The instruments reviewed in this section have been used to assess students' motivation and include the Academic Motivation Scale (AMQ; Section 2.4.2.1), the Motivated Strategies for Learning Questionnaire (MSLQ; Section 2.4.2.2), the Motivation and Engagement Scale (MES; Section 2.4.2.3), the English Language Learner Motivation Scale (ELLMS; Section 2.4.2.4) and the Students' Adaptive Learning Engagement in Science (SALES; Section 2.4.2.5).

2.4.2.1   The Academic Motivation Scale (AMQ)

Vallerand, et al. (1992) developed the Academic Motivation Scale (AMQ) to measure students' motivation level toward education. The AMQ has seven scales, designed to assess three types of intrinsic motivation (intrinsic motivation to know, intrinsic motivation toward accomplishment and intrinsic motivation to experience stimulation), amotivation (lack of both extrinsic and intrinsic motivation) and three types of extrinsic motivation (external regulation, introverted regulation, and identified regulation). The AMQ consists of 28 items, are equally divided among the seven AMQ scales. Despite the merits of the AMQ scale and its use in many studies in the field of education, the author of this study decided not to use the AMQ as it did not meet the needs of the the objectives of the study.

2.4.2.2   Motivated Strategies for Learning Questionnaire (MSLQ)

The researcher also assessed the appropriateness of using the Motivation Strategies for Learning Questionnaire (MSLQ), which was developed by Pintrich, Smith, Garcia and McKeachie (1991), in this study. The MSLQ instrument consists of two parts: a learning strategies section and a motivation section. The learning strategies part contains three scales: cognitive strategies, metacognitive strategies and resource management. The motivation section consists of six scales that assess the following: Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, Control of Learning Beliefs, Self-Efficacy for Learning and Performance and Text Anxiety (Duncan & McKeachie, 2005). The MSLQ was assessed and validated with 356 college students in the USA. The results of this assessment yielded an alpha coefficient from 0.52 to 0.90, indicating an acceptable internal consistency and reliability. In addition, the instrument theoretical framework is consistent with the confirmatory factor analysis results (Pintrich, Smith, Garcia, & McKeachie, 1993). However, the researcher decided not to use the MSLQ in the context of the current study (college students).

2.4.2.3   Motivation and Engagement Scale (MES)

The third instrument that was reviewed for use in the current study was the Motivation and Engagement Scale (MES). Martin (2010) built the MES on a multidimensional framework that used the Motivation and Engagement Wheel, which includes four areas in motivation and engagement: impeding cognitive dimensions, maladaptive behavioural dimensions, adaptive behavioural dimensions and adaptive cognitive dimensions. The

MES consists of eleven scales: Valuing; Self-Efficacy; Planning; Mastery Orientation; Anxiety; Task Management; Control; Persistence; Disengagement; Failure Avoidance; and Uncertain Self-Handicapping.

Liem and Martin (2012) reported that the MES reliability and validity results exhibit a Cronbach's alpha ranging from 0.77 to 0.79.

2.4.2.4 *English Language Learner Motivation Scale (ELLMS)*

Noels, Pelletier, Clément and Vallerand (2000) proposed a theory of motivational orientation and self-determination in foreign language learning and developed the 21-item Language Learning Orientation Scale – Intrinsic motivation, Extrinsic motivation and Amotivation subscales (LLOS-IEA).

The LLOS-IEA was modified by Ardasheva, Tong and Tretter (2012) who devised a new instrument called the English Language Learner Motivation Scale (ELLMS). The new instrument was assessed with 1057 students in 38 elementary, middle and high school English-language learners. The overall Cronbach's alpha coefficient was 0.80 and subscale alphas ranged from 0.58 to 0.74. The factorial structure of the ELLMS was evaluated using exploratory factor analysis with 528 students and confirmatory factor analysis was conducted with a sample of 529 students. The results found that data were best explained by a three-factor solution (external regulation, intrinsic motivation and interjected regulation). The reason it was not selected for use in this study is because the authors concluded that this instrument was developed specifically to measure language learning motivational orientations and although it might usefully serve the English-language learning classrooms this was not applicable to the present study.

2.4.2.5 *Students' Adaptive Learning Engagement in Science (SALES) Questionnaire*

The SALES was developed by Veyaluthum, Aldridge and Fraser (2011) to assess students' motivation and engagement. Validity that was established by basing the constructs in the survey on sound theoretical grounds including achievement goal, expectancy-value, self-efficacy and self-regulated learning.

The SALES contains 32 items assigned to four scales. The first, Learning Goal Attitude, consists of eight items for the purpose of evaluating the degree to which the student sees him/herself to be taking part in a science classroom; the second, Task Value, consists of eight items to evaluate the degree to which the student perceives the science learning tasks

in terms of interest, importance and utility; the third, Self-Efficacy, consists of eight items to evaluate the degree to which the student is confident and believes in his/her own ability in performing science-learning tasks in a successful way; and, finally, Self-Regulation consists of eight items to evaluate the degree to which the student is confident and believes in his/her own ability in performing science-learning tasks in a successful way. The scales use a five-point response scale: strongly disagree, disagree, not sure, agree and strongly agree.

Researchers have emphasised the importance of searching for students' motivation when studying certain subject content areas (Britner & Pajares, 2001; Lent et al., 1997; Pajares, 1997; Pajares & Valiante, 1997; Shell et al., 1995). While students might show various motivational traits in different subject areas, past surveys evaluating students' motivation have been developed predominantly by psychologists interested in comprehending students' motivation for general learning rather than for a particular subject (Blumenfeld, 1992; Blumenfeld & Meece, 1988; Lee & Anderson, 1993; Lee & Brophy, 1996; Weiner, 1990). For example, according to Uguroglu, Schiller and Walberg (1981) the Multidimensional Motivation Instrument, the Academic Motivation Scale (Vallerand et al., 1992), Patterns of Adaptive Learning Survey (Midgley et al., 1996) and the Motivated Strategies for Learning Questionnaire (Pintrich, Smith, Garcia & McKeachie, 1991) evaluate students' general motivational attitudes and behaviours.

In another study, an adapted version of the SALES was used, together with an instrument to assess students' perceptions of the learning environment, to investigate whether students frequently exposed to multimedia had different perceptions of the learning environment and engagement compared to students less frequently exposed (Chipangura & Aldridge, 2017). The findings of this study suggest that students frequently exposed to multimedia in mathematics classes had higher motivation and self-regulation than those not exposed.

Given the strong evidence to support the reliability and validity of the SALES reported in other studies and the relevance of the scales to the research objectives, this instrument was considered suitable for the study reported in this thesis. More detail relating to the SALES is provided in Chapter 3.

2.5   Self-regulation

This section is devoted to defining self-regulation (Section 2.5.1), reviewing past instruments developed to assess student self-regulation (Section 2.5.2) and reviewing past research related to self-regulation and classroom environment (Section 2.5.3).

2.5.1   Defining self-regulation

Schunk and Zimmerman (2008) define self-regulation as the ability of an individual to control conduct in order to achieve a set of goals. Pintrich (2000, p. 453) identifies self-regulated learning as the "active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment".

Butler and Winne (1995) and Zimmerman (1989) identify general and domain-specific components of self-regulation, including motivational, cognitive, meta-cognitive, and behavioural strategies by which students strategically and actively control and modify their learning to achieve their preferred academic outcomes. Pintrich and De Groot (1990) describe three components of self-regulated learning relevant for classroom performance: management and control of effort in academic tasks; use of cognitive strategies; and students' meta-cognitive strategies in planning, monitoring, and modifying their cognition. Zimmerman (2008) describes self-regulated learning as involving the degree to which students motivationally, meta-cognitively and behaviourally participate in the learning process.

Past research indicates that students who are self-regulated gain greater academic achievement (Baker, Chard, Kettlerlin-Geller, Apichatabutra, & Doabler, 2009; Dignath, Buettner, & Langfeldt, 2008; Guthrie, McRae, & Klauda, 2007). Other research evidenced indicates that higher grade-achieving students show greater engagement in different components of self-regulated learning compared to lower achieving students (VanderStoep, Pintrich, & Fagerlin, 1996; Zimmerman & Martinez-Pons, 1990). Also cognitive and meta-cognitive and motivational aspects of self-regulated learning predicted students' performance on quizzes, homework, seatwork, and overall grades in a sample of seventh graders.

As indicated by Kaplan, Lichtinger and Gorodetsky (2009), educators should start by concentrating on understanding students' motivational beliefs to facilitate self-regulated learning in a subject.

2.5.2   Past instruments developed to assess student self-regulation

Several instruments are used regularly to assess students' self-regulated learning. These include the 80-item self-report Learning and Study Strategies Inventory (LASSI; Weinstein, Schulte, & Palmer, 2002) and the 81-item Motivated Strategies for Learning Questionnaire (MSLQ; Pintrich et al., 1991). Both of which are described below

2.5.2.1   Learning and Study Strategies Inventory (LASSI)

Weinstein, Schulte and Palmer (2002) developed the Learning and Study Strategies Inventory (LASSI) to assess the use of learning and study strategies by university students. This 80-item survey instrument has ten scales that measure attitude, motivation, time management, information processing, test-taking strategies, anxiety management, concentration, ability to select main ideas, use of study aids, and implementation of self-testing strategies. Despite its applicability to assessing self-regulation, this survey was not deemed usable at the college level due to its complex scales and length; therefore, it was not further considered for use in this study.

2.5.2.2   Motivated Strategies for Learning Questionnaire MSLQ

Duncan and McKeachie (2005) argue that the Motivated Strategies for Learning Questionnaire (MSLQ) has been used by many studies to measure high-school students' self-regulation. The MSLQ includes two sections: a motivation section and a learning strategies section. The motivation section consists of six scales designed to assess: Intrinsic Goal Orientation; Extrinsic Goal Orientation; Task Value; Control of Learning Beliefs; Self-Efficacy for Learning; and Performance and Text Anxiety. The learning strategies section comprises three scales: cognitive strategies, metacognitive strategies and resource management.

Altogether, four scales – namely, Rehearsal, Elaboration, Organisation and Critical Thinking – assess students' use of different cognitive strategies. Students' use of metacognitive strategies is measured by one scale comprising 12 items. The final four scales in the learning strategies section – namely, Time and Study Environment

Management, Effort Regulation, Peer Learning and Help-Seeking – measure students' management of different resources.

The MSLQ was not considered to be a suitable instrument for this study, even though it was originally developed for use with university students. Close scrutiny of the MSLQ indicated that many of the items were negatively worded and, further, that the reliability of some of the scales was relatively low, and some of the items were long and complex, increasing the possibility of confusing lower secondary students. In addition, the cognitive and meta-cognitive strategy scales (rehearsal, elaboration, organisation, critical thinking and meta-cognitive) each assess complex self-regulatory strategies that may be beyond the comprehension of college students (Duncan & McKeachie, 2005).

Despite these existing surveys, the present study made use of a scale embedded in the SALES (see Section 2.4.2.3). This scale was considered to be suitable. It was part of an instrument that had much support for its reliability and validity and had been used successfully in studies in the Middle East (Alzubaidi et al., 2016).

2.5.3   Past research related to self-regulation and classroom environment

Boekaerts, De Koning and Vedder (2006) conducted research to assess which classroom practices might facilitate the quality of students' Self-Regulation in the classroom, while Seifert (2004) and Seifert and O'Keefe (2001) describe an important factor in the learning process as being how students react to their learning environment. According to these researchers, environments which are perceived as being supportive, nurturing and helpful will develop students' self-determination and sense of confidence which will translate into the learning-oriented behaviours of the intrinsically motivated student.

The components of teacher behaviour and instructions that are likely to influence students' self-regulation include: pace of instruction; clarity; the amount of structure provided; autonomy granted; humour; fairness; teacher enthusiasm and, teacher expectations of students' capacity (Boekaerts & Cascallar, 2006). Boekaerts and Cascallar (2006, p. 202) further recommend that "researchers and teachers focus simultaneously on the students' self-regulation of the learning and motivation process, as well as on the environmental triggers that affect these processes". Furthermore, Zimmerman (2008) concluded that the effects of the learning environment on students' self-regulated learning should be studied further. This study took up this challenge and filled the research gap left by the absence of any previous study investigating the

influence of classroom learning environments on students' self-regulation in college-level business classes in the UAE.

Self-regulation involves affective, cognitive, motivational and behavioural components that provide the individual student with the capacity to adjust actions and goals to achieve the preferred results in light of changing environmental conditions. Self-regulation also promotes learning, which leads to a perception of greater competence, which, in turn, improves motivation towards the goal and to other future goals (Kaur et al., 2018).

Behaviourally, self-regulation refers to a student's engagement in a particular activity and the degree of intensity of student effort and persistence in that activity (Pintrich & Schrauben, 1992). Studies have found a strong relation between self-regulation and achievement, as well as self-regulation having a positive link with other learning outcomes. A number of researchers have spoken of the need for teachers to consciously attend to the development of students' self-regulatory processes alongside cognitive learning (Drake, Belsky, & Pasco Fearon, 2014; Montroy, Bowles, & Skibbe, 2016; Schunk & Ertmer, 2000; Skibbe, Connor, Morrison, & Jewkes, 2011; Todorovich, 2012). A self-regulation model has been developed specifically for this purpose (Webb, Johnson, Meek, Herzog, & Clohessy, 2018). It is argued by Boekaerts and Corno (2005) that it would be valuable if studies related to self-regulation were to investigate relationships between students' self-regulation in the classroom and their perceptions and interpretations of the learning environment. This study takes up the challenge by examining which aspects of the learning environment are related to students' self-regulation.

2.6   Chapter summary

This chapter reviewed literature related to variables important to the study. As such, the review focused on the learning environment and teachers' interpersonal behaviour and the interactions of these with students' motivation and self-regulation.

The study drew on social-cognitive theory, which identifies human functioning as a series of reciprocal interactions between personal, environmental and behavioural determinants (Bandura, 1986). Central to the theory is human agency, or the social-cognitive view which argues that, among other personal factors, individuals have a belief in their capabilities that enables them to exercise a measure of control over their thoughts, feelings and

actions. That is, 'what people think, believe, and feel affects how they behave' (Bandura, 1986, p. 25).

The research reported in this thesis drew on and extended the field of learning environments. The section started with a review of the historical beginnings of the field, highlighting that the field draws on the theoretical work of Lewin (1936), who proposed that the interactions between the environment and the individual wouldaffect an individual's behaviour, and Murray (1938), who, building on the work of Lewin, developed the needs-press model. In the 1960s, Walberg (1968) and Trickett and Moos (1973) independently developed the first learning environment surveys. Since the development of these initial instruments, numerous other instruments have been developed to assess the learning environment. Section 2.3.3 provided a brief description of both historically important and more contemporary instruments. Of these instruments, two were selected for use in the study reported in this thesis: the Questionnaire on Teacher Interaction and the Technology-Rich Outcome-Focused Learning Environment Inventory.

Motivation is the internal circumstance that initiates and sustains goal-oriented behaviour. Three constructs considered being central to motivation, and assessed in the study reported in this thesis, these are: learning goal orientation (reviewed in Section 2.4.1.1), task value (reviewed in Section 2.4.1.2) and self-efficacy (reviewed in Section 2.4.1.3).A number of instruments have been developed to assess student motivation (reviewed in Section 2.4.2). Of these instruments, the Students' Adaptive Learning Engagement in Science (SALES) was considered to be most appropriate to the present study. Therefore, the SALES instrument was modified for use in business college classrooms in the UAE.

Self-regulation is the ability of an individual to control his or her conduct to achieve a set goal. Past instruments developed to assess student's self-regulation was reviewed in section 2.5.2 and past research related to self-regulation and classroom environment was reviewed in section 2.5.3.

This review of the literature highlighted the paucity of research that has been carried out in each of these areas in tertiary-level business classes, to the best of the researcher's knowledge, none has been carried out in business classes in the UAE. Further, the literature review highlighted the significance of the present study in terms of spanning these gaps. The next chapter, Chapter 3, details the research methods that were employed in this study.

Chapter 3

RESEARCH METHODS

3.1 Introduction

In Chapter 2, a review of literature was provided. The research methods described in this chapter draw on that review for various decisions. The research methods are described in this chapter with respect to the design of the research (Section 3.2) and the sample of the study (Section 3.3.). The chapter goes on to describe the instruments used to collect the data (Section 3.4) and how the data was analysed (Section 3.6). Finally, the chapter describes the ethical issues that were considered throughout the study (Section 3.6). A chapter summary is provided in Section 3.7.

3.2 Research design

The focus of this research was to examine the influence of classroom environmental features and teacher interpersonal behaviours on students' motivational beliefs and self-regulation in business classrooms. This exploratory study adopted the positivist assumption that all meaningful problems can be framed in clear-cut frameworks, characterised by precise hypotheses and well-defined methods. There are three common approaches to studying classroom environments: systematic observations; case studies; and, assessing student and teacher perceptions of the learning environment with the use of self-report questionnaires was described by Fraser (2012). This study drew on the latter and was, therefore, primarily a quantitative one using the survey method. Students' perceptual measures of the classroom environment were employed because past research has reported that there is significant merit in engaging the students to report as milieu inhabitants.

This research involved the following five phases of the research process, each of which are detailed in previous chapters as well as the following sections:

1. The first phase involved a review of relevant literature (see Chapter 2) and the identification of the research objectives (introduced in chapter 1).
2. The second phase involved selecting a suitable sample for the study (described in Section 3.3).

3. The third phase involved the selection of the three questionnaires to assess: students' perceptions of their learning environment; students' perceptions of their business teacher's interpersonal behaviour; and, students' motivation and self-regulation in business learning (each of which are described Section 3.4).

4. The fourth phase involved the collection of data and included two stages: a pilot study to ensure the suitability of the instruments to the UAE context; and, the administration of questionnaires for the collection of data for the main study. Details regarding the pilot study and the administration of the surveys have been provided in Section 3.4.4.

5. Finally, the fifth phase involved the analysis of the data. The procedures used to analyse the data to answer research objectives are outlined in section 3.5.

3.3 Sample

The study reported in this thesis was carried out at a women's college of education in the United Arab Emirates (UAE). The college, founded in 1988, is one of the largest higher educational colleges in the UAE. The selection of the campus, from which the participants were drawn, was one of convenience. Convenience sampling has been around for generations, and is one of the most commonly used sampling methods because it provides a fast, readily-available and cost-effective sample (Henry, 1990). Convenience sampling was considered to be appropriate for the present study as it provided a sample relevant to the research objectives. As such, the sample for the study was drawn from the business school of the college. The school enrols sixty per cent of all students of the college.

Given that the college was an all-female campus, the sample included only females. At the time of the study, the sample space involved a total of 1673 students enrolled in business courses at the college. The sampling procedure involved stratified random sampling (Särndal, Swensson & Wretman, 2003), in which, first, the business school was divided into the four major areas (business major, accounting major, finance major and marketing major). From within each of these majors, classes of students were randomly selected. This provided a sample that included students who were enrolled in, and the teachers who taught, three business classes, three accounting classes, three finance classes and two marketing classes.

These classes were randomly selected from each major across the two year levels of the business school. Of these classes, data was collected from the students enrolled in six

first-year classes and five third-year classes. Note that, the decision not to include second year students was related to one of the research objectives – which sought to compare students in their initial stage of study (first year) with those in their final stage of study (third year).

The surveys were administered to all students who volunteered to participate in each of the selected classes (that is, the sample was comprised of in-tact classes). To ensure a fair representation, only classes with more than 10 students were included. This decision was made for two reasons. First, the sizes of the classes varied, with some classes having very few students. By including only classes with more than 10 students ensured that each class had sufficient number of participants to provide meaningful judgement on the learning environment perceptions and views of the teachers' interpersonal behaviours. Second, including only larger ensured that there was a sufficient sample size to allow the analyses needed to address the research objectives.

The sample involved 220 students drawn from 11 classes. Of the 220 students, 120 were first year students drawn from four major, these being, Business (n=30), Accounting (n=30), Finance (n=30) and Marketing (n=30), 100 were third year students drawn from four major, these being, Business (n=30), Accounting (n=20), Finance (n=30) and Marketing (n=20).

3.4   Instruments

Three questionnaires where used to collect the data for the study reported in this thesis. First, a survey was used to assess students' perceptions of the learning environment. Second, a survey was used to assess the teachers' interpersonal behaviour (from the perspective of the teacher and the student). Finally, a survey was used to assess students' adaptive learning engagement.

Traditionally, there have been three main approaches to examining the classroom learning environment, these being observations, case studies and the assessment of students' and teachers' perceptions of the learning environment through the administration of self-report questionnaires (Fraser, 2012). For the present study perceptual measures were considered to be most appropriate for several reasons, as outlined by Fraser (2012). First, the use of survey was considered to be a relatively cost-effective and time-effective means of collecting data. Second, the use of perceptual measures involves the pooled judgements of all students in a class, while observation techniques, more often not, involve a single

observer. Third, the perceptions of students have been found in past research to be more powerful determinants of their behaviour than the factors observed by an outsider.

The present study involved the administration of three perception measures. This section describes the three instruments: the Technology-Rich Outcomes-Focused Learning Environments Inventory (TROFLEI) used to assess students' perceptions of the learning environment (described in Section 3.4.1); the Questionnaire on Teacher Interaction (QTI), used to assess students perceptions of the teachers' interpersonal behaviour (described in Section 3.4.2); and the Student Adaptive Learning Engagement Survey (SALES), used to provide information about students' motivation and self-regulation (described in Section 3.4.3). Finally, the section describes how the instruments were pilot tested to help to ensure the suitability of their use in the UAE tertiary-level context (Section 3.4.4).

3.4.1   Technology-Rich Outcome-Focused Learning Environments Inventory (TROFLEI)

The Technology-Rich Outcome-Focused Learning Environments Inventory (TROFLEI), developed by Aldridge and Fraser (2003), was used to assess student's perceptions of their classroom learning environments in business courses. The development of the TROFLEI drew largely on the What Is Happening In this class? (WIHIC) questionnaire (Aldridge & Fraser, 2003). The WIHIC combined modified versions of the most salient scales from a wide range of existing questionnaires to assess aspects of the learning environments that are of contemporary concern (Fraser, 1998), such as equity and cooperation. Although the WIHIC was originally developed by Fraser, Fisher and McRobbie (1996), the TROFLEI drew on a revised seven-scale version developed by Aldridge, Fraser and Huang (1999); this version has eight items in each scale, providing a total of 56 items in all. The seven scales were Student Cohesiveness, Teacher Support, Involvement, Investigation, Task Orientation, Cooperation, and Equity. The validity of the WIHIC across numerous counties and subject areas, described in Chapter 2, made it a suitable starting point.

The TROFLEI includes all seven scales of the WIHIC, plus an additional three scales that were considered suitable for the context of the present study, these being Differentiation, Computer Usage and Responsibility for Learning (Aldridge and Fraser, 2003). Given the context of the college-level business classes, which were equipped with state-of-the-art

computer and online infrastructure, it was anticipated that these scales would be meaningful to the objective of the study.

The TROFLEI consists of 10 scales with eight items in each, providing total of 80 items. A description of each of the scales and a sample item are provided below in Table 3.2.

Table 3.1   Description and sample item for each TROFLEI scale

Scale	Description of the Scale	Sample Item
Student Cohesiveness	The extent to which students know, help and are supportive of one another.	In this class, I get help from other students.
Teacher Support	The extent to which students know, help and are supported by the teacher.	The teacher helps me when I have trouble with the work.
Involvement	The extent to which students participate in class discussions.	My ideas and suggestions are used during classroom discussions.
Task Orientation	The extent to which it is important to complete activities planned.	I know what I am trying to Accomplish in this class.
Investigation	The extent to which opportunities for inquiry activities are given.	I carry out investigations to test my ideas.
Collaboration	The extent to which students have attentive interest and participate in discussions.	I cooperate with other students in this class.
Equity	The extent to which students perceive their equality in the classroom.	I am treated the same as other students in this class.
Differentiation	The extent to which students different learning styles are addressed.	I am given work that suits my ability.
Computer Usage	The extent to which computers are incorporated into the class.	I use the computer to find out information about the course.
Responsibility for Learning	The extent to which students are treated as mature, responsible and reliable and given responsibility for their learning.	I am given responsibility.

Source: adapted from Aldridge & Fraser (2008) with permission

Chapter 2 reviews studies that have provided support for the validity and reliability of the TROFLEI when used in different countries, such as Australia (Aldridge & Fraser, 2008; Aldridge & Fraser, 2000), Singapore (Chionh & Fraser, 2009), Turkey (Welch, Cakir, Peterson, & Ray, 2012), New Zealand (Koul, Fisher, & Shaw, 2011) and Canada (Fraser & Raafluab, 2013). Further, multi-trait multi-method modelling also found strong support for the reliability of the TROFLEI (Aldridge, Dorman, & Fraser, 2004). The results of these past studies provide support for the TROFLEI's construct validity, while also indicating that the actual and preferred forms shared a common structure with the 10 TROFLEI scales. This strong support for the reliability and validity of the TROFLEI across a number of contexts made the TROFLEI a good choice for the present study.

Students were asked to respond to the individual items of the TROFLEI using two frames of reference: actual (the perceptions of what is happening) and preferred (the environment

that is desired). The actual and preferred versions were presented to students in a side-by-side format to avoid the use of two separate administrations. Much past research (see, for example, Aldridge & Fraser, 2008) has used this format successfully.

		Actual					Preferred				
Student Cohesiveness		Almost Never	Seldom	Some-times	Often	Almost Always	Almost Never	Seldom	Some-times	Often	Almost Always
1	I make friends among students in this class.	1	2	3	4	5	1	2	3	4	5
2	I know other students in this class.	1	2	3	4	5	1	2	3	4	5

Figure 3.1   Side-by-side format for actual and preferred responses used in the TROFLEI

The items were grouped into their respective scales to provide contextual cues (as a header) and were responded to using a five-point frequency scale of almost never, seldom, sometimes, often and almost always. A copy of the TROFLEI, as used in my study, can be found in Appendix A.

3.4.2   *Questionnaire on Teacher Interaction (QTI)*

The Questionnaire on Teacher Interaction (QTI) was selected for use in this study to assess students' perceptions of their business teacher's interpersonal behaviour. The QTI was developed to assess the nature and quality of interpersonal relationships between teachers and students (Wubbels & Brekelmans, 1998; Wubbels & Levy, 1993). The development of QTI was based on Leary's model, which plots interpersonal behaviours along two dimensions, influence and proximity. As described in Chapter 2, the first dimension theorises that that all people communicate according to the extent to which a person is controlling the communication, with the two oppose ends of the spectrum (known as the influence dimension) being controlling or submission. The second dimension 0is related to how much cooperation there is between the two people communicating, with the opposing ends of the spectrum (known as the proximity dimension) being cooperation and opposition.

Using Leary's model for interpersonal relationships, Wubbels and Levy (1993) mapped teacher interpersonal behaviour to the proximity and influence dimensions using eight sectors, each describing a different aspect of teacher behaviour. Each of these sectors represents a QTI scale that assesses eight interpersonal behaviours, these being

Leadership; Helpful and Friendly; Understanding; Students Responsibility; Uncertainty; Dissatisfaction; Admonishment; and Strictness. A description of each scale and a sample item is provided in Table 3.3.

Table 3.2   Description and sample item for each QTI scale

Scale	Description of scale	Item
Leadership	…leads, organises, gives orders, determines procedure and structures the classroom situation	This teacher talks enthusiastically about her/his subject.
Helping/Friendly	…shows interest, behaves in a friendly or considerate manner and inspires confidence and trust.	The teacher helps us with our work.
Understanding	…listens with interest, empathises, shows confidence and understanding and is open with students.	This teacher trusts us.
Responsibility and Freedom	…gives opportunity for independent work, gives freedom and responsibility to students.	We can decide some things in this teacher's class.
Uncertain	…behaves in an uncertain manner and keeps a low profile.	This teacher seems uncertain.
Dissatisfied	…expresses dissatisfaction, looks unhappy, criticises and waits for silence	The teacher thinks that we cheat.
Admonishing	…gets angry, express irritation and anger, forbids and punishes.	This teacher gets angry unexpectedly.
Strict	…checks, maintains silence and strictly enforces the rules.	This teacher is strict.

Source: adapted from Wubbels (1993) with permission

Two versions of the QTI were used, one that was administered to students (see Appendix B for a full copy) and another that was administered to teachers (see Appendix C for a full copy). In both cases, the items were the same but worded slightly differently. For example, in the student version, item 1 read 'This teacher talks enthusiastically about his/her subject'. In the teacher version, the same item read 'I talk enthusiastically about my subject'. In both versions, each of the eight scales had eight items. The items were responded to by participants using a five-point frequency format of never, seldom, sometimes, often and always. Like the TROFLEI, the QTI items were arranged in a cyclic order.

3.4.3   *Students' Adaptive Learning Engagement in Science (SALES)*

The third survey selected for use in this study assessed students' motivation and self-regulation in business learning. The Students' Adaptive Learning Engagement in Science (SALES) questionnaire was developed by Velayutham, Aldridge and Fraser (2011) and, for the purpose of this study, modified for use in business classes. The SALES includes a total of four scales with eight items in each, these being Learning Goal Orientation,

Task Value, Self-Efficacy and Self-Regulation. Table 3.3 provides a description of each of the scales as well as a sample item for each.

Table 3.3   Description and sample item for each SALES scale

Scale	description of Scale	Item
Learning goal orientation	The degree to which the student perceives him/herself to be participating in a classroom for the purpose of learning, understanding, and mastering concepts as well as improving skills	In this class, it is important for me to learn the content that is taught.
Task value	The degree to which the student perceives the learning tasks in terms of interest, importance, and utility.	In this class, what I learnt can be used in my daily life.
Self-efficacy	The degree to which student is confident and believes in his/her own ability in successfully performing learning tasks	In this class, even if the work is hard, I can learn it.
Self-regulation	The degree to which the student controls and regulates his/her effort in learning tasks	In this class, even when tasks are uninteresting, I keep working

Source: Adapted from Velayutham, Aldridge, & Fraser (2011) with permission.

The SALES was selected because, as well as the strong support for its reliability and validity found in past studies, the wording could be easily understood and completed by business college students in the UAE. To make the SALES usable in business classes in the UAE, it was necessary to modify the wording of individual items. To do this, the term 'science' was replaced with the term 'business' throughout. For example, a statement that read 'In this science class, one of my goals is to learn new science content' was changed to 'In this business class, one of my goals is to learn new business content.' Everything else, including the structure, design and format of the original SALES, was kept. This new version of the SALES was referred to as the Students' Adaptive Learning Engagement in Business (SALEB) questionnaire.

The items of the SALEB were responded to by participants using a five-point frequency scale of: almost never, seldom, sometimes, often and almost always. A copy of the SALEB can be found in Appendix D.

3.4.4   *Pilot testing the surveys*

Given that the three surveys were developed in Western countries, it was important to establish their suitability in the UAE context. To do this, a pilot study was carried out. According to Anderson (1998, p. 179), '[p]ilot-testing will identify ambiguities in the instructions; it will help clarify the wording of questions, and it may alert you to omissions

or unanticipated answers in multiple-choice or ranking questions'. The pilot study involved 20 students who volunteered to be involved. These students (five from each of four classes, two from first year and two from third year) were all enrolled in the business school. The students were asked to complete the survey individually and to critique the individual survey items.

As the students responded to the survey, they were asked to evaluate the items for understanding. To ensure that the questionnaires were readable and comprehensible, the students were asked to specify areas that were confusing or unclear and were involved in focus group interviews to discuss the points made. Changes were made based on students' feedback to enhance the clarity and readability of the questionnaire.

The pilot study indicated that all of the items were understood by the students. The response format – in particular, the difference between the actual and preferred responses of the TROFLEI – was used appropriately by the students. The frequency responses format was also used in meaningful ways by the students.

After the pilot study, the three surveys (TROFLEI, QTI and SALES) were administered to the students in the main sample. To ensure consistency of the administration, the surveys were administered by the researcher. This allowed the researcher to carefully explain the requirements to the participants.

3.5 Data analysis

The data collected using the three instruments were analysed using SPSS version 21 to address each of the research objectives. A description of the analyses used to address each of the research objectives is provided below.

3.5.1 Research Objective 1, 2 and 3: Validation of the instruments

The first three objectives sought to provide evidence to establish the reliability and validity of the three questionnaires (TROFLEI, QTI and SALES), when used at the college-level in the UAE, involved examination of the factor structure, internal consistency reliability and discriminant validity.

Principal axis factor analysis with oblique rotation was used to examine the *a priori* factor structure of each of the three instruments. As a data-reduction technique, factor analysis can be used to reduce a large number of items to a smaller set of underlying factors

(Coakes & Ong, 2010). For the purpose of this study, oblique (correlated) rotation, as opposed to orthogonal (e.g., varimax-uncorrelated) was used (Pallant, 2007). Based on the advice of Tabachnick and Fidell (2007), oblique rotation was selected because, although orthogonal rotation is easier to report and to interpret, it does not assume that the underlying constructs are interrelated or correlated. Given the interrelated nature of learning environment constructs, oblique rotation was selected as it allows the factors to be correlated (Tabachnick & Fidell, 2007).

The Cronbach's alpha reliability coefficient was used to examine the internal consistency reliability. This test is used to determine whether the survey items, relative to other items that are used to measure the same construct, are assessing a similar construct. If these items of the same scales assess a similar construct, it is referred to as being homogeneous or having internal consistency. The internal consistency reliability was established using the Cronbach's alpha coefficient for two units of analysis (the individual student and the class mean).

Finally, the discriminant validity of the three instruments (TROFLEI, QTI AND SALEB) was examined. The component correlation matrix, generated during oblique rotation, provides an indication of the inter-correlations of the scales involved. Whilst it is anticipated that there will be a degree of correlation between scales, a high correlation would indicate that the constructs represented by different scales overlap. The recommended cut-off of 0.80 was used in this study (Brown, 2006).

3.5.2   Research Objective 4: Associations between learning environment, teacher interpersonal behaviour and adaptive learning engagement

To examine relationships between students' perceptions of the learning environment, teacher interpersonal behaviour and student motivation and self-regulation, simple correlation and multiple regression analysis were used. Simple correlation was used to provide information about the bivariate association between each learning environment scale, teacher behaviour scale and student outcome.

Multiple regression analysis was used to provide a more complete picture of the joint influence of the learning environment dimensions on students' motivation and self-regulation and teacher interpersonal behaviour on students' motivation and self-regulation to reduce the Type I error rate associated with the simple correlation analysis. For the regression analysis, the set of 10 TROFLEI and the eight QTI scales constituted

the independent variable and the set of the four SALEB scales constituted the dependent variable. To interpret which of the scales (learning environment and teacher interpersonal behaviour) contributed to elucidating the variance in students' motivation and self-regulation, the beta values were examined. The beta values help to explain the effect of the environment or behaviour variables on a student outcome (as assessed by the SALEB) when all other environment/behaviour variables in the analysis are mutually controlled.

3.5.3   Research Objectives 5, 6 and 7: Examining differences

For the third, fourth and fifth research objectives, the research examined whether differences existed for: a) actual and preferred perceptions of the learning environment (Research Objective 3); b) second- and third-year students (Research Objective 4); and c) teachers and students, in terms of perceptions of the teacher interpersonal behaviour (Research Objective 5). To examine these differences, one-way multivariate analysis of variance (MANOVA) was used. In cases where the multivariate test using Wilks' lambda criterion yielded significant results overall, the univariate analysis of variance (ANOVA) was interpreted separately for each of the scales. For each research objective, the sets of eight of TROFLEI scales, four SALEB scales and eight QTI scales were dependent variables.

As well as the MANOVA, which examined whether differences were statistically significant, the magnitudes of the differences, in terms of effect sizes, were calculated, as recommended by Thompson (1998) and Cohen (1977). The effect size was calculated by dividing the difference between means by the pooled standard deviation and was expressed in standard deviation units.

3.6   Ethical considerations

Prior to the commencement of the research, including inviting participants and collecting data, ethics approval from Curtin University was applied for and obtained. The ethics approval number for this study was SMEC-06-14 (see a copy of the approval letter at Appendix E). Throughout this study, at all stages, ethical considerations were applied to minimise any risk to participants. This section describes these considerations and how they were address in terms of informed consent (Section 3.6.1), anonymity (Section 3.6.2) and consideration (Section 3.6.3)

3.6.1 Informed consent

As stated above, before approaching the college, teachers and students to invite them to participate in the research, ethics approval from Curtin University had been sought. Also, the researcher had obtained permission from the college dean and the head of the business department of the participating college.

To ensure that all participants were aware of their rights throughout the research process, informed consent was obtained before the data collection began. To do this, the researcher provided an information sheet to all participants explaining the objectives and expected outcomes of the research. The information sheet made clear the nature and type of data to be collected, the means of collection and how the data would be used. It was also made clear that, during the study, participants had the right to withdraw at any time and without penalty. It was made very clear that the relationship between the participant and college staff members, as well as the grades of students, would not be affected should they choose to withdraw. By signing the consent form, the students and teachers agreed to participate and gave their approval for the data collected from them to be reported in this study. Students consented to their involvement in the study when they agreed to voluntarily complete the surveys.

Prior to the administration of the surveys, all participants were given a copy of the information sheet, the contents of which were explained verbally. The information sheet was presented at least 24 hours prior to the administration of the survey to ensure that participants had an opportunity to ask questions prior to consenting. See Appendix F and G for copies of the information sheet and consent form for students and teachers, respectively.

3.6.2 Anonymity

All participants were assured that the information provided in this study would be kept separate from any personal details. To match up the students' responses to the different surveys, the names of students were required. Once the surveys were matched, numeric values were assigned as codes to ensure that all identifying features of the data were removed prior to data preparation and entry. This ensured that no student or teacher could be identified in the data analysis process or in the reporting of the study.

Access to the data was only available to the researcher and his PhD supervisor. The data was stored on a password-protected computer during data entry and analysis, after which it was stored electronically at Curtin University.

3.6.3   Consideration

To ensure that students were not inconvenienced, care was taken to reduce the amount of class time taken up with respect to the administration of the surveys. While the surveys were completed during class time, wherever possible this was done at a time that the teachers were to be absent (to minimise disruption and loss of curriculum time). Feedback and findings were shared with those teachers and students who requested them.

3.7   Chapter summary

Chapter 3 has described the sample and methods of data collection and analyses used in the study reported in this thesis. The data was collected from a sample of 220 college students who were enrolled in business classes, as well as the 11 teachers who taught these students. Three surveys were used to collect the data. The first assessed students' perceptions of their classroom learning environments business classes. The TROFLEI (developed by Aldridge and Fraser, 2003) has a total of 80 items assigned to 10 scales (eight items per scale), these being: Student Cohesiveness, Teacher Support Cooperation, Equity, Task Orientation, Investigation, Involvement, Differentiation, Computer Usage, and Responsibility for Learning

The second instrument was the Questionnaire of Teacher Interaction (QTI), which was used to assess students' perceptions of eight teacher interpersonal behaviours (each of which were assessed using six items, providing a total of 48 items): Leadership, Helping/Friendly, Understanding, Students' Responsibility, Uncertainty, Dissatisfaction, Admonishment and Strictness. Finally, the Student Adaptive Learning Engagement in Science (SALES) questionnaire was modified to suit business students. Three of the scales (Self-Efficacy, Task Value and Learning Goal Orientation) were used to assess student motivation and one scale was used to assess students' self-regulation. The modified version, renamed the Student Adaptive Learning Engagement in Business (SALEB), consists of 32 items with eight items in each of the four scales. All three surveys, where appropriate, were modified to ensure that they were suitable for use at the college-level and in the UAE context.

The data collected from 220 students were analysed in different ways to address each of the research objectives. The first research objective was to examine the reliability and validity of the instruments. To do this, first, principal axis factoring with oblique rotation was used to examine the factor structure of each instrument. Second, Cronbach's alpha reliability coefficient was calculated to provide an estimate of the internal consistency of each scale in each of the three instruments. Finally, the ability of each scale of the scales of the three surveys to differentiate between perceptions of students in different classrooms was examined using an analysis of variance (ANOVA) with class membership as the main effect.

To examine relationships between students' perceptions of the learning environment, and the interpersonal behaviour of teachers' and students' adaptive learning engagement, simple correlation and multiple regression analysis were used. Simple correlation was used to provide information about the bivariate association between each learning environment scale, teacher behaviour scale and student outcome. Multiple correlation analysis of relationships between each of the SALEB scales and the TROFLEI and QTI scales. This analysis provided a more complete picture of the joint influence of the correlated environment dimensions of the dependent variable outcomes.

To examine whether differences existed for a) actual and preferred responses to the TROFLEI, b) second and third year students (TROFLEI, QTI and SALEB), and c) teachers and students responses to the QTI, two analyses were used. First, one-way multivariate analysis of variance (MANOVA) was used to determine whether the differences were statistically significant; second, effect sizes were used to examine the magnitude of the differences.

The next chapter reports the results of the data analysis used to address each of the research objectives.

Chapter 4

ANALYSIS AND RESULTS

4.1 Introduction

In the previous chapter, Chapter 3, a description of the research methods used in the study was provided. This chapter, Chapter 4, reports the results. The data from 220 students studying at the UAE college level were analysed in various ways to address each of the seven research objectives (introduced in Chapter 1). These results are organised according to the research objectives. First the evidence to support the reliability and validity of the research instruments is reported (Section 4.2). Next, the results pertaining to the relationship between students' perceptions of the learning environment and teacher interpersonal behaviour and their motivation and self-regulation is reported (Section 4.3). Subsequent sections report the actual and preferred differences in learning environment perceptions (Section 4.4), Teacher–student differences (Section 4.5); and differences between students in first and third year (Section 4.6). Finally, a chapter summary is provided in Section 4.7.

4.2 Reliability and validity of the instruments

The study involved the administration of the three instruments. Because they had never been used in business classes in the UAE, it was important to ensure their suitability for use in this context to provide confidence in the results of the subsequent research objectives. Prior to the main administration, the three surveys were pilot-tested with 20 business students from the first and third year (see Chapter 3 for a description of the selection of these students). The pilot test sought to determine the clarity and the readability of the items as well as the usability of the frequency-response format. Once the pilot study had established that the instruments all were suitable, the survey was administered to the main sample. The data collected from 220 students was then analysed in various ways to provide information to support the reliability and validity of each instrument: TROFLEI (see Section 4.2.1), SALEB (see Section 4.2.2) and QTI (see Section 4.2.3).

4.2.1 *Reliability and validity of the TROFLEI*

Prior to commencing analysis, the multivariate normality and sampling adequacy were examined for data collected using the TROFLEI. Using Bartlett's test of sphericity, the results suggest that the approximate chi-square was 9047.095 and was statistically significant ($p<0.001$). Further, the Kaiser-Maiyer-Olkin measure of adequacy was considered to be high (0.818). These results confirmed that the data was appropriate for the next step of the analysis. Once established, the data collected from 220 first- and third-year business college-level students were analysed to examine the factor structure (see Section 4.2.1.1), internal consistency reliability (see Section 4.2.1.2) and discriminant validity (see Section 4.2.1.3).

4.2.1.1 *Factor structure of the TROFLEI*

Principal axis factor analysis with oblique rotation was carried out to extract salient factors. As explained in Chapter 3, oblique rotation was selected for use in this study because of the assumed interrelatedness of the various learning environment factors (Coakes & Steed, 2001). Two criteria were used for the retention of any item: first, it must have a factor loading of at least 0.40 on its own scale; and, second, that it should load on less than 0.40 on all other scales. This cut-off of 0.40 is generally considered to be acceptable according to Field (2009), Kline (1994), Stevens (1992) and Thompson (2004). The analyses were carried out separately for the two version of the TROFLEI: actual and preferred.

Factor analysis indicated that, of the original 81 items of the TROFLEI, 22 items did not fulfil the prescribed criteria, these being: items 5, 6, 7 and 8 for the Student Cohesiveness scale; item 16 for the Teacher Support scale; items 21, 23 and 24 for the Involvement scale; items 30, 31 and 32 for the Task Orientation; items 33 for the Investigation scale; items 57 and 58 for the Differentiation scale; items 70, 71, 72 and 73 for Computer Usage Scale; and items 74, 75, 76 and 81 for the Young Adult Ethos. A decision was made to omit these items from all further analysis to improve the reliability of the TROFLEI. The factor loadings for the remaining items of the TROFLEI, reported in Table 4.1, indicate that, for both the actual and preferred versions, all of the items loaded on their own scale at 0.40 or more and on all other scales at less than 0.40.

The percentage of variance for each scale are reported at the bottom of Table 4.1. For the actual version of the TROFLEI, the percentage of variance ranged from 2.56% to 21.22%

for different scales, with the cumulative variance being 56.67%. For the preferred version of the TROFLEI, the percentage of variance ranged from 2.08 to 32.6%, with a cumulative variance of 62.53%.

The eigenvalue, reported to provide an indication of the importance of each factor, can be found at the bottom of Table 4.1. For the actual version, the eigenvalues for different scales varied from 1.41% to 11.67% and, for the preferred version, the eigenvalues ranged from 1.27 to 19.9% All of these eigenvalues satisfied Kaiser's (1960) recommendation of a value greater than 1.

For the final version, all 10 of the TROFLEI scales (Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Co-operation, Equity, Differentiation, Computer Usage and Responsibility for Learning) were retained. The results of the factor analysis, reported in Table 4.1, provide strong support for the factorial validity of the instrument when used with this sample.

4.2.1.2 Internal consistency reliability

Table 4.2 reports the internal consistency reliability (Cronbach's alpha reliability) for the different TROFLEI scales. This analysis was carried out for two units of analysis, the individual and class mean. For the actual version, Cronbach's alpha coefficients ranged from 0.75 to 0.84 with the individual student as unit of analysis, and from 0.70 to 0.91 using the class as the unit of analysis. For the preferred version, Cronbach's alpha coefficients ranged from 0.78 to 0.90 with the individual student as unit of analysis, and from 0.73 to 0.96 using the class as the unit of analysis. These results suggest satisfactory internal consistency for the TROFLEI when used in the UAE.

Table 4.1   Factor loadings, percentage variance and eigenvalue for the TROFLEI

Item No	Factor Loading																			
	Student Cohesiveness		Teacher Support		Involvement		Task Orientation		Investigation		Cooperation		Equity		Differentiation		Computer Usage		Resp. for Learning	
	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref
1	0.76	0.69																		
2	0.75	0.73																		
3	0.74	0.62																		
4	0.66	0.61																		
9			0.67	0.47																
10			0.70	0.57																
11			0.63	0.60																
12			0.74	0.75																
13			0.58	0.78																
14			0.68	0.62																
15			0.47	0.61																
17					0.72	0.51														
18					0.63	0.51														
19					0.53	0.67														
20					0.52	0.46														
22					0.47	0.52														
25							0.53	0.51												
26							0.54	0.51												
27							0.61	0.67												
28							0.57	0.46												
29							0.58	0.52												
34									0.76	0.65										
35									0.76	0.66										
36									0.55	0.60										
37									0.55	0.69										
38									0.60	0.71										
39									0.62	0.63										
40									0.68	0.41										
41											0.66	0.53								
42											0.45	0.54								
43											0.60	0.60								
44											0.69	0.49								
45											0.57	0.53								
46											0.75	0.61								
47											0.68	0.63								
48											0.52	0.50								

Item No	Factor Loading																			
	Student Cohesiveness		Teacher Support		Involvement		Task Orientation		Investigation		Cooperation		Equity		Differentiation		Computer Usage		Resp. for Learning	
	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref	Act	Pref
49													0.57	0.62						
50													0.66	0.66						
51													0.68	0.76						
52													0.62	0.74						
53													0.59	0.65						
54													0.58	0.67						
55													0.61	0.66						
56													0.59	0.57						
59															0.46	0.47				
60															0.65	0.75				
61															0.47	0.46				
62															0.76	0.86				
63															0.73	0.88				
64															0.62	0.64				
65																	0.60	0.55		
66																	0.66	0.46		
67																	0.67	0.54		
68																	0.68	0.59		
69																	0.61	0.61		
77																			0.67	0.63
78																			0.56	0.69
79																			0.65	0.70
80																			0.57	0.69
81																			0.70	0.67
% Variance	4.04	4.50	5.19	32.64	3.14	2.19	2.56	2.83	21.22	3.50	3.80	3.18	3.32	2.41	4.48	4.31	3.04	4.93	5.88	2.08
Eigen-value	2.22	2.74	2.85	19.91	1.73	1.34	1.41	1.73	11.67	2.14	2.09	1.95	1.83	1.47	2.46	2.63	1.67	3.01	3.23	1.27

Factor loadings less than 0.40 have been omitted.

N= 220 students in 11 classes for each of the pre-test and post-test

Table 4.2   Internal consistency reliability for each TROFLEI scale (actual and preferred version) for two units of analysis (individual and class mean)

Scale	No of items	Unit of analysis	Cronbach Alpha	
			Actual	Preferred
Student Cohesiveness	4	Individual	0.75	0.81
		Class Mean	0.73	0.80
Teacher Support	5	Individual	0.79	0.88
		Class Mean	0.87	0.91
Involvement	5	Individual	0.79	0.84
		Class Mean	0.87	0.90
Task Orientation	5	Individual	0.75	0.82
		Class Mean	0.87	0.92
Investigation	7	Individual	0.84	0.89
		Class Mean	0.89	0.94
Cooperation	6	Individual	0.81	0.84
		Class Mean	0.91	0.96
Equity	6	Individual	0.79	0.90
		Class Mean	0.74	0.90
Differentiation	6	Individual	0.81	0.84
		Class Mean	0.70	0.83
Computer Usage	5	Individual	0.75	0.78
		Class Mean	0.71	0.73
Resp. for Learning	5	Individual	0.83	0.87
		Class Mean	0.77	0.80

N= 220 students in 11 classes

4.2.1.3   Discriminant validity

The component correlation matrix for TROFLEI scales obtained from oblique rotation, reported in Table 4.3, showed that the highest correlation for the actual version was 0.91. For the preferred version, the highest value was 0.96. Both of these values met the requirements of discriminant validity (with a recommended cut-off of 0.80), thereby supporting the discriminant validity of the TROFLEI scales.

Table 4.3 Component correlation matrix for the actual and preferred versions of the TROFLEI scales

Component	Teacher Support	Computer Usage	Student Cohesiveness	Differentiation	Investigation	Cooperation	Task Orientation	Equity	Involvement	Resp. for Learning
Teacher Support	—	0.19	0.18	0.28	0.16	0.27	0.20	0.27	0.07	0.19
Computer Usage	0.22	—	0.06	0.15	0.12	0.21	0.23	0.08	0.13	0.14
Student Cohesiveness	0.25	0.11	—	0.11	0.18	0.16	0.15	0.16	0.08	0.15
Differentiation	0.29	0.22	0.18	—	0.12	0.22	0.15	0.14	0.06	0.08
Investigation	0.27	0.21	0.12	0.26	—	0.17	0.12	0.11	0.04	0.06
Cooperation	0.25	0.22	0.12	0.31	0.27	—	0.25	0.19	0.09	0.25
Task Orientation	0.27	0.23	0.16	0.16	0.28	0.23	—	0.16	0.12	0.15
Equity	-0.35	-0.39	0.16	0.31	0.27	0.34	0.33	—	0.01	0.17
Involvement	0.22	0.11	0.07	0.23	0.20	0.20	0.20	0.27	—	0.05
Resp. for Learning	0.13	0.26	0.11	0.25	0.12	0.13	0.10	0.20	0.06	—

N= 220 students in 11 classes
Correlations for the actual version are reported above the diagonal and correlations for the preferred version are reported below the diagonal

4.2.2 Reliability and validity of the QTI

The collected data from 220 students were analysed to provide information that would support the reliability and validity of the QTI, in terms of: factor structure (see Section 4.2.2.1); internal consistency reliability (see Section 4.2.2.2); and discriminant validity (see Section 4.2.2.3).

4.2.2.1 Factor structure

Factor analysis indicated that, of the 48 original items of the QTI, nine items did not fulfil the criterion of having a loading of at least 0.40 on its own scale and less than 0.40 on all other scales. Therefore these items were omitted from all further analysis, these being: item 10 for the Uncertain scale; item 12 for the Understanding scale; item 20 for the Admonishing scale; item 30 for the Helpful/Friendly scale; items 34, 35 and 36 for the Students Responsibility scale; and items 42 and 43 for the Strict scale. For the remaining 39 items, all but seven items loaded at 0.40 or greater on their own scale and less than 0.40 on all other scales. For the exceptions, three items loaded at 0.40 on their own scale and one other scale, these being: item 3 of the Leadership scale also loaded on the Strict scale; item 22 for the Admonishing also loaded on the Dissatisfied scale and item 37 for Admonishing scale also loaded on the Dissatisfied scale. Four of the items did not load at 0.40 on its own scale or any other scale, these being: item 10 for the Uncertainty scale, item 30 for the Helpful and Friendly scale, item 36 for the Student Freedom and Responsibility scale and item 44 for the Strict scale. In all cases, these items were retained as their inclusion improved the reliability of the scales and instrument overall. The factor loadings for the remaining items of the refined QTI are reported in

Table 4.4. Item numbers shown in the table are not listed in the order in which they appear in the survey that was administered to students.

The percentage of variance and eigenvalue for each QTI scale are recorded at the bottom of

Table 4.4. For different QTI scales, the percentage variance ranged from 1.79% to 25.11% and the eigenvalues ranged from 1.02 to 9.29. These results, all of which were greater than 1, indicate that the eigenvalue was adequate for all of the scales, as recommended by Kaiser (1960).

Table 4.4   Factor loading, eigenvalue and percentage of variance for the QTI

Item	Leadership	Uncertainty	Understanding	Admonishing	Helpful/friendly	Student Responsibility and Freedom	Dissatisfied	Strict
1	0.48							
2	0.62							
3	0.60							0.40
4	0.53							
5	0.50							
6	0.41							
7		0.68						
8		0.70						
9		0.69						
10		—						
11		0.59						
13			0.65					
14			0.50					
15			0.58					
16			0.64					
17			0.46					
18				0.81				
19				0.75				
21				0.55				
				0.50			0.48	
22								
27					0.42			
28					0.53			
29					0.49			
30					—			
31						0.51		
32						0.46		
33						0.69		
36						—		
37				0.47			0.59	
38							0.75	
39							0.75	
40							0.73	
41							0.68	
42							0.53	
44								—
45								0.41
46								0.48
% Variance	25.11	3.11	1.79	4.29	2.93	4.83	15.16	2.78
Eigen-value	9.29	1.15	4.83	1.58	1.08	1.79	5.61	1.02

N= 220 Students in 11 classes
Factor loading less than 0.40 have been omitted

4.2.2.1 Internal consistency reliability

As with the other surveys used in this study, the internal consistency was calculated using Cronbach's alpha coefficient (Cronbach, 1951). The Cronbach's alpha coefficient for each QTI scale, reported in Table 4.5, ranged from 0.70 to 0.89 for the individual student as unit of analysis, and from 0.80 to 0.91 for the class as the unit of analysis. The highest alpha reliability was for the Dissatisfied scale (α=0.89) and the lowest was for Leadership and Strict scales (α=0.70) with the individual student as the unit of analysis. For the class as the unit of analysis, the highest alpha reliability was for the two scales of Uncertainty and Dissatisfied (α=0.91) and the lowest was for the Strict scale (α=0.80). Overall, these

results suggest highly satisfactory internal consistency for the QTI when used with business students in the UAE.

Table 4.5   Internal consistency reliability (Cronbach's alpha) for the QTI scales

Scale	Unit of Analysis	Cronbach's Alpha
Leadership	Individual	0.70
	Class Means	0.86
Uncertainty	Individual	0.85
	Class Mean	0.91
Understanding	Individual	0.74
	Class Mean	0.80
Admonishing	Individual	0.82
	Class Mean	0.83
Helpful and Friendly	Individual	0.73
	Class Mean	0.81
Student Freedom and Responsibility	Individual	0.75
	Class Mean	0.82
Dissatisfied	Individual	0.89
	Class Mean	0.91
Strict	Individual	0.70
	Class Mean	0.76

N= 220 students in 11 classes

4.2.2.2 *Discriminant validity*

Table 4.6 shows the component correlation matrix that was generated during oblique rotation. The results show that the highest correlation was 0.72, and this value met the requirements of discriminant validity (based on the recommendation of Gurtman and Pincus, 2000).

Table 4.6   Component correlation matrix for the QTI scales

Scale	Leadership	Uncertainty	Understand-ing	Admonish-ing	Helpful/ friendly	Student Respons-ibility	Dissatis-fied	Strict
Leadership	—	0.06	0.24	0.59	0.04	0.05	0.27	0.63
Uncertainty		—	0.28	0.01	0.34	0.41	0.59	0.17
Understanding			—	0.25	0.19	0.26	0.24	0.06
Admonishing				—	0.09	0.07	0.72	0.66
Helpful/friendly					—	0.22	0.59	0.36
Student Responsibility						—	0.24	0.03
Dissatisfied							—	0.35
Strict								—

N= 220 students in 11 classes

4.2.3   Reliability and validity of the SALEB

The data collected from 220 business college-level students in the UAE were analysed to provide support for the validity and reliability of the SALEB. The analysis was used to examine the factor structure (Section 4.2.3.1), internal consistency reliability (Section 4.2.3.2) and discriminant validity (Section 4.2.3.3).

4.2.3.1   Factor structure

The factor loadings for each of the items included in the SALEB are provided in

Table 4.7. As with the TROFLEI, items were required to have a factor loading of at least 0.40 on their *a priori* scale. The results indicated that the factor loadings ranged from 0.41 to 0.80 for the different items. Given these results, all 32 items of the SALEB were retained.

The percentage of variance, reported at the bottom of

Table 4.7, ranged from 5.02% to 34.02% for the different SALEB scales. The cumulative variance was 51.97%. The eigenvalue, also reported at the bottom of

Table 4.7, ranged from 1.92 to 10.89 for the different SALEB scales. These results were consistent with Kaiser's (1960) recommendation that the values be greater than 1.

4.2.3.2   Internal consistency reliability

For each of the SALEB scales, the Cronbach's alpha coefficient was calculated to provide an estimate of the internal consistency reliability. The results, reported in Table 4.8, show that the Cronbach's alpha coefficients for all SALEB scales were above 0.70 (ranging from 0.85 to 0.86 for the individual as the unit of analysis and from 0.76 to 0.85 for the class mean. Based on the cut-off recommended by Cohen et al. (2000), these results met the requirements of a good scale.

4.2.3.3   Discriminant validity

Table 4.9 shows the component correlation matrix obtained from oblique rotation. The results indicate that the highest correlation between any of the four scales was 0.42. Given the recommended cut off of less than 0.80 (Brown, 2006), these findings were considered to be acceptable. Therefore, the discriminant validity of the instrument was supported.

Table 4.7   Factor loading, eigenvalue and percentage of variance for the SALEB

Item	Factor Loading			
	Learning Goal Orientation	Task Value	Self-Efficacy	Self-Regulation
1	0.78			
2	0.78			
3	0.64			
4	0.80			
5	0.57			
6	0.52			
7	0.61			
8	0.66			
9		0.61		
10		0.72		
11		0.73		
12		0.58		
13		0.61		
14		0.71		
15		0.71		
16		0.67		
17			0.50	
18			0.53	
19			0.51	
20			0.47	
21			0.57	
22			0.62	
23			0.60	
24			0.49	
25			0.41	
26				0.48
27				0.58
28				0.60
29				0.69
30				0.73
31				0.69
32				0.64
33				0.79
% Variance	6.93	6.00	5.02	34.02
Eigenvalue	2.22	1.92	1.61	10.89

N= 220 students in 11 classes

Table 4.8   Internal consistency reliability (Cronbach's alpha) for the SALEB scales for two units of analysis (Individual and Class Mean)

Scale	Number of items	Unit of analysis	Cronbach's alpha
Learning Goal Orientation	8	Individual	0.85
		Class Mean	0.85
Task Value	8	Individual	0.86
		Class Mean	0.82
Self-Efficacy	8	Individual	0.85
		Class Mean	0.83
Self-Regulation	8	Individual	0.85
		Class Mean	0.76

N= 220 students in 11 classes

Table 4.9   Component correlation matrix for the SALEB scales

Scale	Learning goal	Task value	Self-efficacy	Self-regulation
Learning goal	—	0.36	0.40	0.22
Task value		—	0.42	0.31
Self-efficacy			—	0.35
Self-regulation				—

N= 220 students in 11 classes

4.3   Relationships between the learning environment, teacher interpersonal behaviour and motivation and self-regulation

The fourth research objective was to investigate whether students' perceptions of the learning environment and teacher interpersonal behaviour were related to their motivation and self-regulation (Research Objective 4). Simple correlation and multiple regression analyses were used to investigate these relationships. As described in Chapter 3, the bivariate relationships between the TROFLEI and the SALEB and the QTI and the SALEB were examined using simple correlations.

Multiple regression analysis, on the other hand, was conducted separately for the two analyses (once to examine relationships between the TROFLEI and the SALEB and once to examine the relationships between the QTI and the SALEB). For the regression analysis, the set of ten TROFLEI and eight QTI scales constituted the independent variable and the set of SALEB scales constituted the dependent variables. This analysis provided a more complete picture of the joint influences of the learning environment and

interpersonal behaviour dimensions on student motivation and self-regulation. This analysis was also used to reduce the Type I error rate associated with simple correlation analysis. In addition, the standardised regression weights were analysed to examine which of the learning environment and interpersonal behaviour scales were likely to influence student motivation when all of the other variables were mutually controlled. The results for the simple correlation and multiple regression analysis are reported for the learning environment (Section 4.3.1) and teacher interpersonal behaviour (Section 4.3.2).

4.3.1 *Learning environment – motivation and self-regulation associations*

To examine the relationships between students' perceptions of the learning environment and their motivation and self-regulation, simple correlation and multiple regression analysis were used. The results are reported in Table 4.10 and expanded on below for each of the SALEB scales: Learning Goal Orientation, Task Value, Self-Efficacy, and Self-Regulation.

For Learning Goal Orientation, the results of the simple correlation indicate that there were statistically significant ($p<0.01$) and positive relationships for all ten TROFLEI scales (Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Cooperation, Equity, Differentiation, Computer Usage and Responsibility for Learning).

The multiple regression (R) for the ten environment scales of the TROFLEI and Learning Goal Orientation (reported at the bottom of Table 4.13) was 0.59, positive and statistically significant ($p<0.01$). This result suggests a moderately strong relationship, with the learning environment accounting for 59 percent of variation in students' self-reports of learning goal orientation. To examine which scales were likely to contribute to variance in Learning Goal Orientation, the standardised regression coefficients (β) were examined. The results indicated that two of the 10 TROFLEI scales, Equity and Responsibility for Learning, were statistically significantly and positively related to Learning Goal Orientation.

For Task Value, the results of the simple correlation indicate that there were statistically significant ($p<0.01$) and positive relationships for all 10 scales of the TROFLEI (Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Cooperation, Equity, Differentiation, Computer Usage and Responsibility for Learning). The multiple regressions (R) between the ten environment scales of the TROFLEI and

Task Value (reported at the bottom of Table 4.11) was 0.55, positive and statistically significant ($p<0.01$). This result suggests a moderately strong relationship, with the learning environment accounting for 55 percent of variation in students' self-reports of task value. To examine which scales were likely to contribute to variance in Task Value, the standardised regression coefficients (β) were examined. The results indicated that two of the 10 TROFLEI scales, Investigation and Responsibility for Learning, were statistically significantly and positively related to Task Value.

For Self-Efficacy, the results of the simple correlation indicate that there were statistically significant ($p<0.01$) and positive relationships for all 10 scales of the TROFLEI (Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Cooperation, Equity, Differentiation, Computer Usage and Responsibility for Learning). The multiple regressions (R) between the 10 environment scales of the TROFLEI and Self-Efficacy (reported at the bottom of Table 4.10) was 0.62, positive and statistically significant ($p<0.01$). This result suggests a moderately strong relationship, with the learning environment accounting for 62 percent of variation in students' self-reports of self-efficacy. The standardised regression coefficients (β) indicated that four of the 10 TROFLEI scales (Equity, Differentiation, Computer Usage and Responsibility for Learning) were statistically significantly ($p<0.01$) and positively related to Task Value.

For Self-Regulation, the results indicated that, with one exception (Student Cohesiveness), the correlations were statistically significant ($p<0.01$) and positive relationships for all 10 TROFLEI scales (Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation, Cooperation, Equity, Differentiation, Computer Usage and Responsibility for Learning). The multiple regressions (R) for the 10 TROFLEI scales and Self-Regulation (reported at the bottom of Table 4.10) was 0.55, positive and statistically significant ($p<0.01$). This result suggests a moderately strong relationship, with the learning environment accounting for 55 percent of variation in students' self-reports of self-regulation.The standardised regression coefficients (β) indicated that four of the 10 TROFLEI scales, were statistically significantly and positively related to Self-Regulation: Involvement, Task Orientation Computer Usage and Responsibility for Learning.

Table 4.10 Simple correlation and multiple regression analyses for associations between learning environment perceptions and motivation and self-regulation

Scale	Learning Goal Orientation		Task Value		Self-Efficacy		Self-Regulation	
	r	β	r	β	r	β	r	β
Student Cohesiveness	0.16*	0.05	0.14*	0.01	0.13*	0.03	0.07	0.06
Teacher Support	0.20**	0.06	0.20**	0.05	0.23**	0.02	0.14*	0.04
Involvement	0.16*	0.13	0.24**	0.06	0.31**	0.02	0.34**	0.16*
Task Orientation	0.25**	0.02	0.27**	0.02	0.32**	0.03	0.37**	0.15*
Investigation	0.29**	0.08	0.38**	0.16*	0.39**	0.10	0.30**	0.01
Cooperation	0.27**	0.01	0.33**	0.09	0.34**	0.01	0.30**	0.03
Equity	0.41**	0.15*	0.31**	0.01	0.46**	0.20**	0.27**	0.04
Differentiation	0.24**	0.01	0.32**	0.10	0.41**	0.17**	0.30**	0.10
Computer Usage	0.30**	0.09	0.24**	0.03	0.35**	0.14*	0.33**	0.18**
Resp. for Learning	0.54**	0.41**	0.49**	0.35**	0.49**	0.22**	0.45**	0.29**
Multiple Correlation (R)		0.59**		0.55**		0.62**		0.55**

*$p<0.01$ **$p<0.01$
N= 220 students in 11 classes.

4.3.2 Teacher interaction – engagement associations

To examine whether students' perceptions of their teacher interpersonal behaviour were related to their motivation and self-regulation (Research Objective 4), simple correlation and multiple regression analyses were employed. The results are reported in Table 4.11 and expanded on for each of the SALEB scales: Learning Goal Orientation, Task Value, Self-Efficacy and Self-Regulation.

For Learning Goal Orientation, the results of the simple correlation indicated that there were statistically significant ($p<0.05$) and positive relationships between Learning Goal Orientation and four QTI scales (Leadership, Understanding, Helpful and Friendly, and Student Freedom and Responsibility), with the exceptions being the Uncertainty, Admonishing, Dissatisfied and Strict scales. The positive and statistically significant ($p<0.01$) multiple correlation (R) (reported at the bottom of Table 4.11) suggested that the interactions of the teacher accounted for 45% of variation in learning goal orientation. To examine which scales were likely to contribute to variance in Learning Goal Orientation, the standardised regression coefficients ($β$) were examined. The results indicated that one QTI scale, Leadership, was statistically significantly ($p<0.05$) and positively related to Learning Goal Orientation.

Table 4.11 Simple correlation and multiple regression analyses for associations between teachers' interpersonal behaviour and motivation and self-regulation

Scale	Learning Goal Orientation		Task Value		Self-Efficacy		Self-Regulation	
	r	β	r	β	r	β	r	β
Leadership	0.41**	0.23*	0.41**	0.26**	0.40**	0.13	0.51**	0.41**
Uncertainty	0.01	0.01	–0.15*	0.09	0.15*	0.16	–0.19**	0.16
Understanding	0.39*	0.15	0.33**	–0.03	0.41**	0.12	0.41**	–0.01
Admonishing	–0.04	0.02	0.14*	0.06	0.09	–0.11	0.16	–0.04
Helpful and Friendly	0.29**	0.07	0.41**	0.19*	0.40**	0.12	0.38**	0.01
Student Freedom and Responsibility	0.15*	0.06	0.31**	0.14	0.31**	0.16	0.33**	0.17*
Dissatisfied	–0.11	–0.13	0.01	–0.20*	0.00	–0.23*	0.05	–.20*
Strict	0.11	0.04	0.21**	0.04	0.25**	0.19	0.30**	0.16
Multiple Correlation (R)		0.45**		0.49**		0.51**		0.57**

*$p<0.05$ **$p<0.01$
$N= 220$ students in 11 classes

For the Task Value scale, the results of the simple correlation indicated that, with one exception (the Dissatisfied scale), there were statistically significant ($p<0.01$) and positive relationships between Task Value the scales of the QTI (Leadership, Uncertainty, Understanding, Admonishing, Helpful and Friendly, Student Freedom and Responsibility, Dissatisfied and Strict). The positive and statistically significant ($p<0.01$) multiple correlation (R) (reported at the bottom of Table 4.11) suggested that the interactions of the teacher accounted for 49% of variation in task value. The standardised regression coefficients (β) indicated that two of the scales, Leadership and Helpful and Friendly, were statistically significantly and positively related to Task Value and one scale, Dissatisfied, was statistically significantly and negatively related to Task Value.

For the Self-Efficacy scale, the results of the simple correlation indicate that there were statistically significant ($p<0.01$) and positive relationships between Self-Efficacy for six of the eight scales of the QTI scales (Leadership, Uncertainty, Understanding, Admonishing, Helpful and Friendly, Student Freedom and Responsibility, Dissatisfied and Strict), the exceptions being the Admonishing and Dissatisfied scales. The positive and statistically significant ($p<0.01$) multiple correlation (R) (reported at the bottom of Table 4.11) suggested that the interactions of the teacher accounted for 51% of variation in self-efficacy. The standardised regression coefficients (β) indicated that one QTI scale, Dissatisfied, was statistically significantly and negatively related to Task Value.

For Self-Regulation, the results of the simple correlation indicate that there were statistically significant ($p<0.01$) and positive relationships between Self-Regulation and six of the eight scales of the QTI (Leadership, Uncertainty, Understanding, Admonishing, Helpful and Friendly, Student Freedom and Responsibility, Dissatisfied and Strict). The exceptions were for the Leadership and Admonishing scales. The positive and statistically significant ($p<0.01$) multiple correlation (R) (reported at the bottom of Table 4.11) suggested that the interactions of the teacher accounted for 57% of variation in self-regulation. The standardised regression coefficients (β) indicated that two scales, Leadership and Student Freedom and Responsibility, were statistically significantly and positively related to Self-Regulation and one scale, Dissatisfied, was statistically significantly and negatively related to Self-Regulation.

4.4   Actual–preferred learning environment differences

The fifth research objective was to examine differences between perceptions of the actual and preferred classroom learning environments of students in business courses in the UAE. When students responded to the TROFLEI, they were asked to indicate both the frequency with which a practice takes place as well as the frequency with which they would prefer it to take place. One-way MANOVA (described in Chapter 3) was used to examine whether the differences between these actual and preferred responses for the TROFLEI were statistically significant.

Given that the multivariate test (Wilks' lambda) showed a statistically significant actual–preferred difference overall, the ANOVA results were interpreted for each of the TROFLEI scales (see Table 4.12). The statistically significant ($p<0.01$) results indicate that, for all but one of the 10 TROFLEI scales, students would prefer a more favourable level of the learning environment than they perceive to be present, the exception being for Cooperation.

In addition to examining whether the differences were statistically significant, effect sizes were used to examine the magnitudes of the actual–preferred differences (as recommended by Thompson, 1998, 2001). As described in Chapter 3, the effect sizes were calculated in terms of the differences in means divided by the pooled standard deviation. The effect sizes, for scales that had statistically significant differences, range between approximately 0.51 of a standard deviation for the computer usage scale and 0.92 standard deviations for the Involvement and Investigation scales. These results suggest educationally important differences between the actual and preferred learning

environment. Below, Figure 4.1 provides a graphical profile of students' responses to the actual and preferred versions of the TROFLEI.

Table 4.12 Average item mean, average item standard deviation and differences (effect size and MANOVA results) between actual and preferred perceptions on the TROFLEI with the individual as the unit of analysis

Scale	Average Item Mean		Average Item Standard Deviation		Differences	
	Actual	Preferred	Actual	Preferred	Effect Size	*F*
Student Cohesiveness	3.89	4.35	0.79	0.82	0.67	2.81**
Teacher Support	3.68	4.33	0.78	0.74	0.85	3.37**
Involvement	3.52	4.25	0.81	0.76	0.92	3.43**
Task Orientation	3.97	4.49	0.70	0.63	0.78	3.12**
Investigation	3.65	4.34	0.77	0.72	0.92	3.57**
Cooperation	3.98	3.96	0.74	0.72	0.02	1.15
Equity	4.00	4.44	0.71	0.89	0.54	3.01**
Differentiation	3.64	4.19	0.83	0.76	0.69	3.15**
Computer Usage	4.05	4.46	0.83	0.76	0.51	2.97**
Responsibility for Learning	4.16	4.57	0.74	0.65	0.58	2.89**

**$p<0.01$
The sample consisted of 220 students in 11 classes.
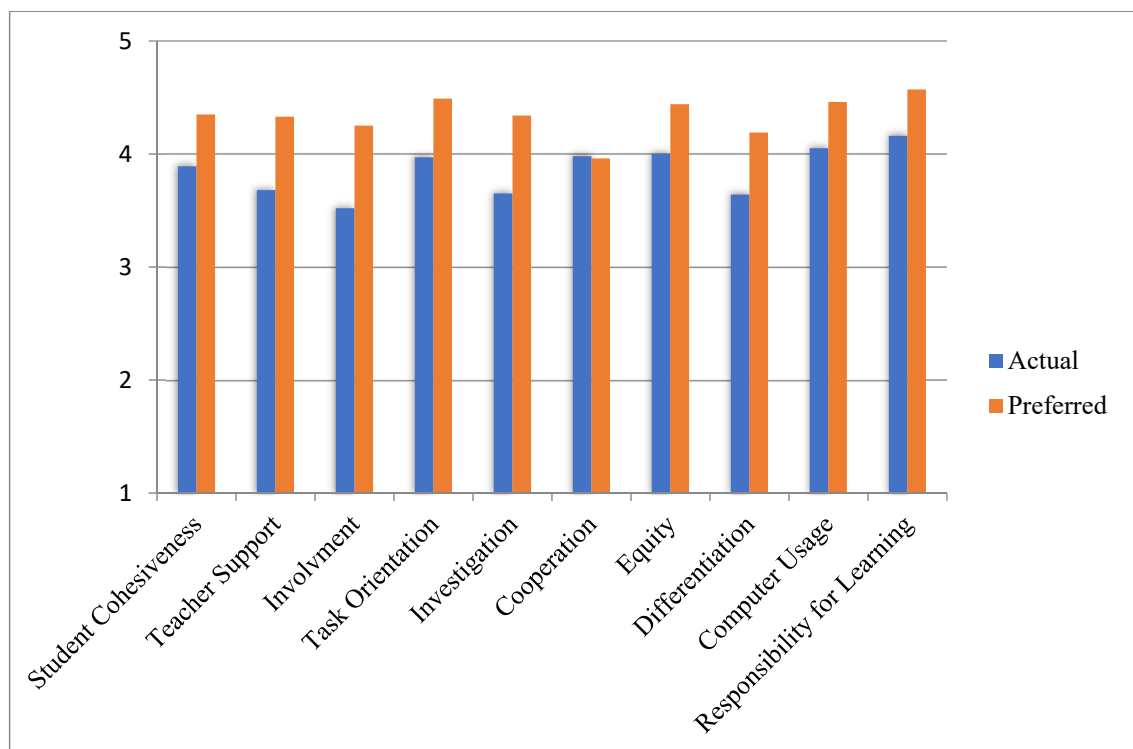
Figure 4.1 Average item mean for learners' scores on the actual and preferred forms of the TROFLEI

The results shown in Figure 4.1 indicate that, on average, the classroom practices in college business classes, reflected in TROFLEI, occur between sometimes and often for

Student Cohesiveness, Teacher Support, Involvement, Task Orientation, Investigation Cooperation and Differentiation and between often and almost always for Equity, Computer Usage and Differentiation. In all cases, students would prefer more of each TROFLEI scale, with the exception of Cooperation.

4.5   Teacher–student differences in perceptions of teacher interpersonal behaviour

The students' class mean and the teachers' scores were used as the unit of analysis. The ANOVA results, reported in the right-hand column of Table 4.13, indicate that there was a statistically significant ($p<0.01$) difference between students' and teachers' perceptions of the teacher's interpersonal behaviour for all eight QTI scales. To explain these differences, the average item means were examined for each QTI scale. The results, reported in Table 4.13, indicate that teachers reported higher scores than did their students for three of the eight QTI scales, these being Leadership, Understanding, and Helpful and Friendly. That is, teachers felt that they exhibited more Leadership, Understanding and Helpful and Friendly behaviours than their students reported. Conversely, the teachers reported lower scores than their students for the remaining five scales: Uncertainty, Admonishing, Student Responsibility and Freedom, Dissatisfied and Strict. That is, the students perceived their teachers to exhibit these behaviours (Uncertainty, Admonishing, Student Responsibility and Freedom, Dissatisfied and Strict) more often than the teachers did. Interestingly, the standard deviations, reported in Table 4.13, indicate that, generally, the spread of the responses was less for the students than for the teachers. That is, teachers' reports about themselves was more likely to vary than the students' reports about them.

Whereas MANOVA was used to investigate the statistical significance of the differences between students and teacher responses, effect sizes were used to describe the magnitude or educational importance of those differences, as recommended by Thompson (1998) and Cohen (1977). The effect size, which was calculated by dividing the difference between means by the pooled standard deviation, expresses the difference in standard deviation units. The effect sizes ranged from just over three-quarters of a standard deviation (for the Understanding scale) to 4.23 standard deviations (for Dissatisfied). According to Cohen's (1988) criteria, the magnitudes of these differences all fell into the large range – indicating that they were, potentially, of educational importance.

Table 4.13   Average item mean, average item standard deviation and difference (effect size and MANOVA results) for students and teachers on each QTI scale

QTI Scale	Average Item Mean		Average Item Standard Deviation		Difference	
	Student	Teacher	Student	Teacher	Effect Size	F
Leadership	4.12	4.45	0.22	0.29	1.28	9.11**
Uncertainty	3.33	1.94	0.35	0.49	3.26	58.27**
Understanding	4.14	4.31	0.18	0.25	1.78	24.75**
Admonishing	3.31	2.00	0.29	0.56	2.94	47.64**
Helpful and Friendly	4.01	4.56	0.22	0.37	1.81	16.77**
Student Responsibility and Freedom	3.64	2.92	0.21	0.47	2.00	21.08**
Dissatisfied	3.14	1.74	0.35	0.31	4.23	97.09**
Strict	3.55	3.11	0.25	0.32	1.53	13.26**

N= 11 teachers and the responses of 220 students in 11 classes
**p<0.01
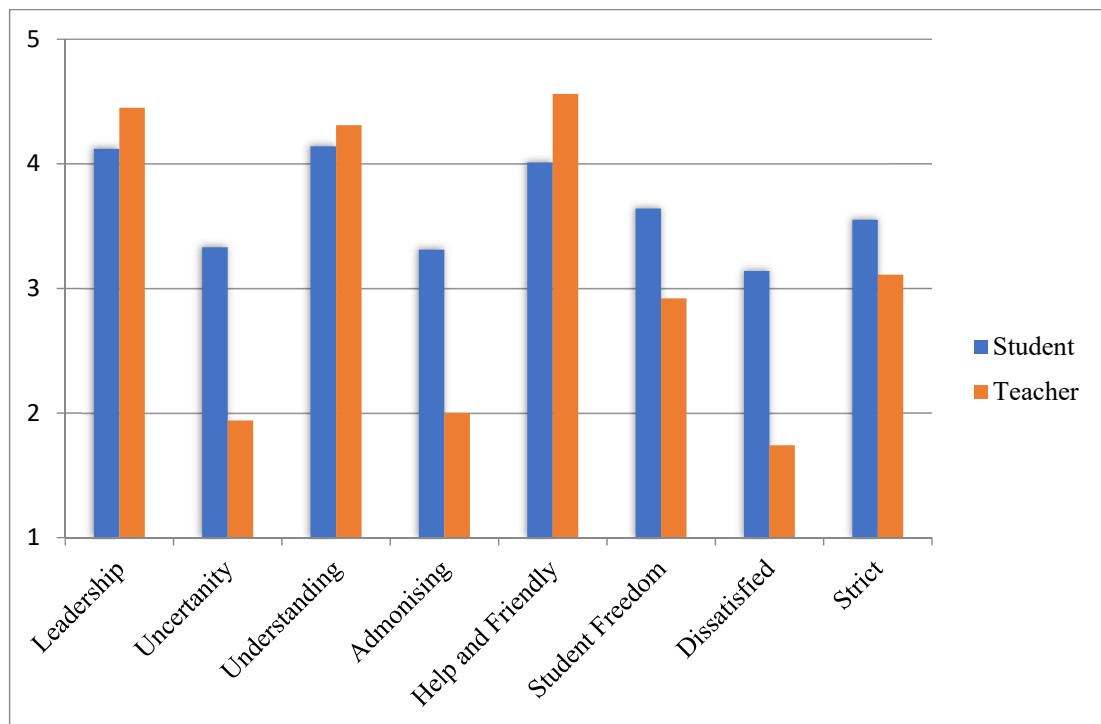
Figure 4.2   Average item mean differences, for the scores for students and teachers on each QTI scale

4.6   First- and third-year differences

The seventh research objective sought to investigate whether differences exist for students enrolled in the first and third years of their business courses. To address this objective, a one-way MANOVA was used. Given that the multivariate test was statistically significant overall, for the set of eight TROFLEI scales, the univariate ANOVA results were interpreted separately for each of the scales. In contrast to the

MANOVA, which was used to investigate the statistical significance of the differences between the responses of first- and third-year students, the effect sizes were used to describe the magnitude or educational importance of those differences, as recommended by Thompson (1998) and Cohen (1977). The effect sizes were calculated by dividing the difference between means by the pooled standard deviation, and expressing the difference in standard deviation units. The differences for first- and third-year students are organised in terms of the learning environment (Section 4.6.1), motivation and engagement (Section 4.6.2) and teacher interpersonal behaviour (Section 4.6.3).

4.6.1 *Learning environment differences*

As a first step, the average item mean (calculated because the number of items were different for different scales) was examined for each learning environment scale. The average item means are reported in Table 4.14 and portrayed graphically in Figure 4.3. These results indicate that students in their third year report higher levels for seven of the ten learning environment scales (Student Cohesiveness, Involvement, Task Orientation, Investigation, Equity, Differentiation and Responsibility for Learning) than their first-year counterparts. These students also reported less Teacher Support than first-year students. An examination of the standard deviation, reported in Table 4.14 indicates that, generally, the spread of the responses for third-year students was slightly less than for the first-year students.

Given that statistically significant results ($p<0.01$) were found for the multivariate test (in terms of Wilks' lambda criterion), it was assumed that there were year-level differences as a whole. Therefore, the univariate ANOVAs were interpreted for each of the TROFLEI scales. The ANOVA results, reported in the right hand column of Table 4.14, indicated that there was a statistically significant ($p<0.05$) difference between first- and third-year students' perceptions of the learning environment for four of the ten scales, these being Involvement, Task Orientation, Investigation and Differentiation. An examination of the means indicates that, for all of the TROFLEI scales with a statistically significant difference, third-year students scored higher than the first-year students.

Table 4.14 Average item mean, average item standard deviation and difference (effect size and MANOVA results) for the scores for students in first-year and third-year classes on each TROFLEI scale

TROFLEI Scale	Average Item Mean		Average Item Standard Deviation		Difference	
	First Year	Third Year	First Year	Third Year	Effect Size	F
Student Cohesiveness	3.82	3.98	0.76	0.80	0.20	2.37
Teacher Support	3.70	3.66	0.81	0.73	0.05	0.17
Involvement	3.40	3.68	0.85	0.73	0.35	6.47**
Task Orientation	3.86	4.10	0.76	0.59	0.35	6.31**
Investigation	3.55	3.76	0.80	0.73	0.27	4.04*
Cooperation	3.99	3.97	0.75	0.73	0.03	0.04
Equity	3.94	4.06	0.71	0.62	0.18	1.64
Differentiation	3.50	3.81	0.90	0.86	0.35	6.44**
Computer Usage	4.04	4.05	0.83	0.67	0.01	0.01
Responsibility for Learning	4.10	4.23	0.78	0.69	0.18	1.63

*$p<0.01$ **$p<0.01$
$N= 120$ student in first-year classes and 100 students in third-year classes
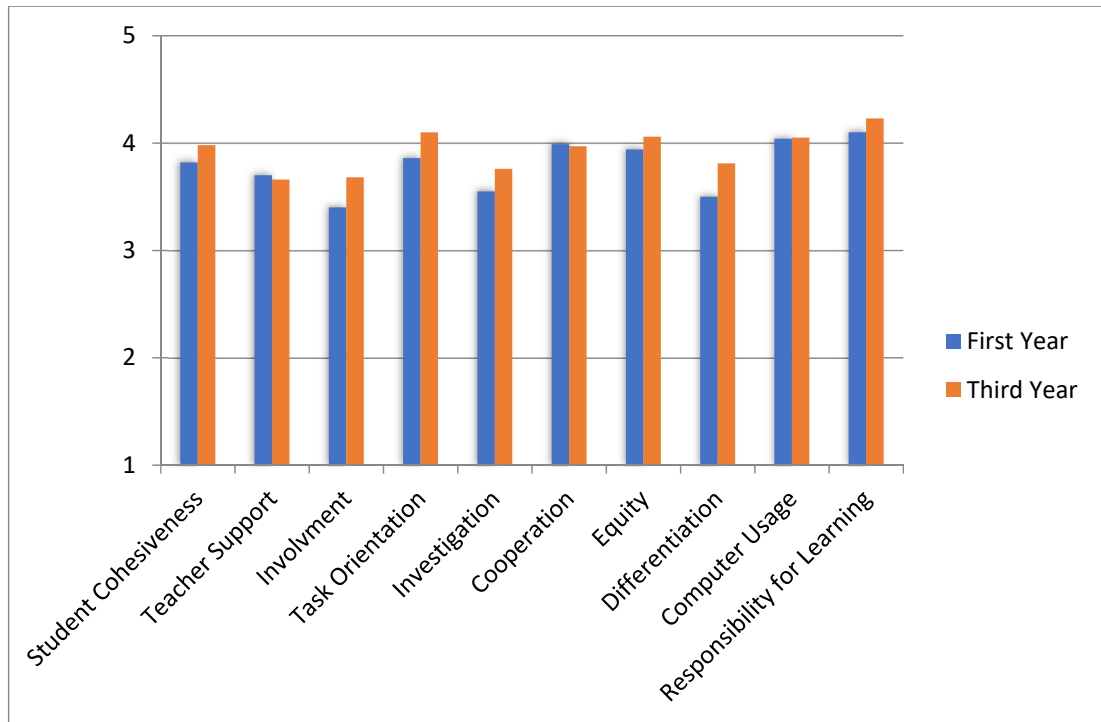
Figure 4.3 Average item mean, for the scores for students in first-year and third-year classes on each TROFLEI scale

In contrast to the MANOVA, which was used to investigate the statistical significance of the differences, the effect sizes were used to describe the magnitude of those differences, as recommended by Thompson (1998). The effect sizes for those scales with a statistically significant difference ranged from 0.27 standard deviations for the Investigation scale, to 0.35 standard deviations for Student Involvement, Task Orientation and Differentiation.

According to Cohen's (1988) criteria, the magnitudes of these differences were considered to be small to medium.

4.6.2   Teacher interpersonal behaviour differences

The average item mean (calculated because the number of items were different for different scales) was examined for each of the teacher interpersonal behaviour scales. The average item means are reported in Table 4.15 and portrayed graphically in Figure 4.3. These results indicate that student in their third year reported slightly higher levels for five of the eight QTI scales (Leadership, Uncertainty, Understanding, Help and Friendly, and Strict) than their first-year counterparts. These students also reported slightly less Admonishing, Student Freedom and Dissatisfied teacher behaviours than did first-year students. An examination of the standard deviation, reported in Table 4.15, indicates that, generally, the spread of the responses for third-year students was slightly less than for the first-year students.

Given that the multivariate test did not yield significant results in terms of Wilks' lambda criterion, this indicated that there were no year-level differences in the set of criterion variables as a whole. Therefore, the univariate ANOVAs were not interpreted. The effect sizes, used to describe the magnitude of the differences, indicated that, despite the lack of statistical significance, three of the eight QTI scales could be considered medium in effect (Cohen, 1988): Leadership (effect size=0.20 standard deviations); Understanding (effect size=0.19 standard deviations; and Strict (effect size=0.20 standard deviations).

Table 4.15   Average item mean, average item standard deviation and difference (effect size and MANOVA results) for students in first-year and third-year classes on each QTI scale

QTI Scale	Average Item Mean		Average Item Standard Deviation		Difference	
	First Year	Third Year	First Year	Third Year	Effect Size	F
Leadership	4.07	4.21	0.62	0.54	0.24	3.09
Uncertainty	3.29	3.36	1.00	1.06	0.07	0.22
Understanding	4.09	4.21	0.71	0.55	0.19	2.03
Admonishing	3.34	3.27	1.05	0.97	0.07	0.29
Help and Friendly	3.93	4.08	0.71	0.58	0.23	2.80
Student Freedom	3.65	3.58	0.80	0.76	0.09	0.43
Dissatisfied	3.13	3.04	1.18	1.21	0.08	0.30
Strict	3.48	3.63	0.79	0.71	0.20	2.35

N= 120 student in first-year classes and 100 students in third-year classes
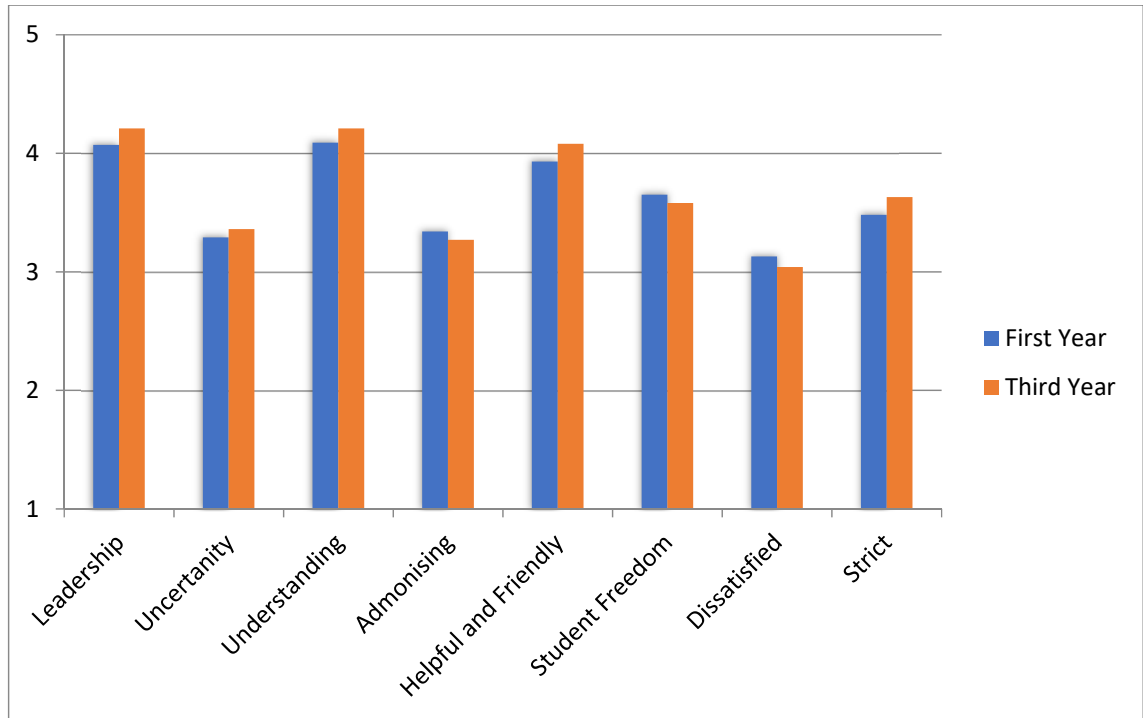
Figure 4.4   Average item mean, for the scores for students in first-year and third-year classes on each QTI scale

4.6.3   *Motivation and self-regulation differences*

The average item mean (calculated because the number of items was different for different scales) was examined for each of the motivation and self-regulation scales. The average item means, reported in Table 4.16, indicate that students in their third year reported very slightly higher levels for all four of the SALEB scales (Learning Goal Orientation, Task Value, Self-Efficacy and Self-Regulation) than their first-year counterparts. Further, an examination of the standard deviation, reported in Table 4.16, indicates that, generally, the spread of the responses for third-year students was slightly less than for the first-year students.

However, the multivariate test, in terms of Wilks' lambda criterion, was not statistically significant for the year-level differences in the set of criterion variables as a whole; therefore, the univariate ANOVAs were not interpreted. Generally reflecting the non-significant differences for the SALEB scales, the effect sizes were low, ranging from 0.03 standard deviations for the Self-Regulation scale, to 0.19 standard deviations for the Self-Efficacy scale.

Table 4.16   Average item mean, average item standard deviation and difference (effect size and MANOVA results) for students in first-year and third-year classes on each SALEB scale

SALEB Scale	Average Item Mean		Average Item Standard Deviation		Difference	
	First Year	Third Year	First Year	Third Year	Effect Size	F
Learning Goal Orientation	4.26	4.31	0.70	0.60	−0.08	0.33
Task Value	4.04	4.08	0.68	0.68	−0.06	0.21
Self-Efficacy	3.96	4.08	0.64	0.62	−0.19	1.19
Self-Regulation	4.14	4.16	0.68	0.58	−0.03	0.04

N=120 student in first-year classes and 100 students in third-year classes

4.7   Chapter summary

Data from 220 first- and third-year college-level business students were analysed to address the seven research objectives for this study. An important first step was to provide evidence to support the reliability and validity of each of the three instruments (TROFLEI, QTI and SALEB) when used with college-level students in the UAE. To address this objective, analysis was undertaken to examine the factor structure, scale reliability (Cronbach's alpha reliability coefficient) and ability to differentiate between classes (ANOVA).

For the TROFLEI, the factor structure, after removing 22 items during item analysis, indicated that all scales loaded. The internal consistency reliability (Cronbach's alpha coefficient) for the different scales ranged from 0.75 to 0.90 with the individual student as unit of analysis, and from 0.71 to 0.96 when using the class as the unit of analysis. The results of the ANOVA suggested that all ten scales of the TROFLEI were able to statistically significantly ($p<0.01$) differentiate between the perceptions of students in different classes. These findings provided strong support for the reliability and validity of the TROFLEI when used with this sample.

For the QTI, the results of the factor analysis (with nine items removed during item analysis) supported the *a priori* factor structure for the eight scales. The internal consistency reliability (Cronbach's alpha coefficient) for the eight QTI scales ranged from 0.70 to 0.89 with the individual student as unit of analysis, and from 0.80 to 0.91 when using the class as the unit of analysis. The ANOVA results, used to determine the ability of the QTI scales to differentiate between the perceptions of teachers and students in different classrooms, were statistically significant ($p<0.01$) for all eight QTI scales.

These results suggest high reliability for the QTI scales when used with this sample of students.

For the SALEB, the factor structure showed that all items had a factor loading of 0.40 or greater on their *a priori* scale, and lower than 0.40 on all other scales. The internal consistency reliability for the different scales ranged from 0.85 to 0.86 with the individual student as unit of analysis, and from 0.76 to 0.85 when using the class as the unit of analysis. The results also suggested that all four SALEB scales could statistically significantly ($p<0.01$) differentiate between the perceptions of students in different classes. These results provided strong evidence to support the reliability and validity of the SALEB when used with this sample.

Relationships between the learning environment and teacher interpersonal behaviour and the four student engagement scales (Research Objective 4) were examined using simple correlation and multiple regression analyses. For the learning environment, the results of the simple correlation analysis indicated that all 10 TROFLEI scales were statistically significantly related to three of the four SALEB scales (Learning Goal Orientation, Task Value and Self-Efficacy). For the last scale, Self-Regulation, the correlations were statistically significant for nine of the 10 TROFLEI scales. The multiple correlation was positive and statistically significant for all four SALEB scales. Interpretation of the beta values indicated that two of the 10 TROFLEI scales, Equity and Responsibility for Learning, contributed uniquely and significantly to the explanation of the variance in students' Learning Goal Orientation. Two TROFLEI scales, Investigation and Responsibility for Learning, were independent predictors of Task Value. Four TROFLEI scales, Equity, Differentiation, Computer Usage and Responsibility for Learning, contributed uniquely and statistically significantly to the explanation of the variance in students' Self-Efficacy. Finally, four TROFLEI scales, Involvement, Task Orientation, Computer Usage and Responsibility for Learning were independent predictors of students' Self-Regulation.

For the relationships between the perceptions of teacher interpersonal behaviour and adaptive learning engagement, the results of the simple correlations found a range of statistically significant correlations between the QTI and SALEB scales. The multiple correlations (R) were statistically significant and positive for all SALEB scales. Interpretation of the beta values suggested that there were fewer statistically significant correlations. Of the QTI scales, the Leadership scale was found to contribute statistically

significantly to the explanation of the variance in three of the four SALEB scales, these being Learning Goal Orientation, Task Value and Self-Regulation. Leadership, Helpful and Friendly, and Dissatisfied scales were found to be significant independent predictors of Task Value (note that the Dissatisfied had a negative standardised regression coefficient). The beta value also indicated that the Dissatisfied scale was an independent and negative predictor of both Self-Efficacy and Self-Regulation. Finally, the Student Freedom and Responsibility scale was a positive independent predictor of Self-Regulation.

The results of the MANOVA, used to examine differences between students' actual and preferred perceptions of the learning environment (Research Objective 5), indicated that, for all 10 TROFLEI scales, students scored higher for the preferred version. Of these, the difference was statistically significant for nine of the 10 TROFLEI, the exceptions being for the Cooperation scale. The effect sizes for the statistically significant scales ranged from 0.51 standard deviations to 0.92 standard deviations.

One-way MANOVAs were conducted separately for the different surveys to examine differences between the first- and third-year students, in terms of learning environment, teacher interpersonal behaviour and students' adaptive learning engagement. For perceptions of the learning environment, the results indicated that there were statistically significant differences for four of the ten TROFLEI scales, these being Involvement, Task Orientation, Investigation and Differentiation. In all cases, students in third year scored higher than their first-year counterparts. The effect sizes for these four scales ranged from 0.27 to 0.35 standard deviations. For students' self-reports of adaptive learning engagement and students' perceptions of the teacher's interpersonal behaviour, there were no statistically significant differences between the responses of first- and third-year students.

The last research objective examined whether differences exist for teachers and students' views of teachers' interpersonal behaviour. The MANOVA results indicated that there were statistically significant differences for all eight QTI scales. For three of the eight QTI scales, teachers scored higher than did students, these being Leadership, Understanding, and Helpful and Friendly. For the remaining five QTI scales, the students scored higher than did teachers, these being for Uncertainty, Admonishing, Student Responsibility and Freedom, Dissatisfied, and Strict. The effect sizes for these differences

ranged from 0.78 to 4.23 which, according to Cohen (1988), can be considered medium to large in effect.

Chapter 5

DISCUSSION AND CONCLUSION

5.1 Introduction

The study reported in this thesis was driven by a post-positivist view that involved the collection of quantitative data. The data was collected using three instruments, namely, the Technology-Rich Outcome-Focused Learning Environments Inventory (TROFLEI; to assess students' perceptions of the learning environment), the Questionnaire on Teacher Interaction (QTI; to assess students' views of the teachers' interpersonal behaviour) and a modified version of the Students' Adaptive Learning Engagement in Science (SALES; to assess students' motivation and self-regulation). These three surveys were administered to 220 college students in 11 business classes at one higher education institution located the UAE (the name of the Emirate has been withheld to ensure confidentiality).

This chapter concludes the thesis. First, a summary and discussion of the results reported in Chapter 4, are provided in Section 5.2. Next, the limitations of the study are outlined in Section 5.3 and the recommendations, drawn from the findings, are summarised in Section 5.4. The significance of the study is then outlined in Section 5.5 and the chapter closes with some concluding remarks in Section 5.6.

5.2 Summary of the major findings of the study

This section provides a summary of the major findings, structured around the seven research objectives. The major findings of this study are summarised under the following sub-headings:

- Validity and reliability of the instruments (Section 5.2.1);
- Relationships between students' motivation and self-regulation and their perceptions of the learning environment and teacher interpersonal behaviour (Section 5.2.2);
- Differences between the perceptions of teachers and students in terms of teacher interpersonal behaviour (Section 5.2.3); and
- Differences between first- and third-year students: learning environment; teacher interpersonal behaviour, and motivation and self-regulation (Section 5.2.4).

5.2.1 Research Objective 1, 2 and 3: Validity and reliability of the instruments

To provide confidence in subsequent results, the initial focus of this study was to validate the three instruments that were used to collect quantitative data. Therefore, the first three research objectives sought to examine the reliability and validity of the three instruments, when modified and translated for use with UAE College level business students, to assess students': perceptions of the learning environment (Research Objective 1); perceptions of teacher interpersonal behaviour (Research Objective 2); and c) Self-reports of motivation and self-regulation (Research Objective 3).

To assess the reliability and validity of each instrument, first, the *a priori* factor structure of the instrument was checked with the sample of 220 students. Second, the internal consistency (Cronbach's alpha) reliability for each instrument was used to assess the extent to which the items in a given scale assessed the same construct. Third, discriminant validity, involving the component correlation matrix generated during oblique rotation, was examined. This section summarises and discusses the evidence provided to support the reliability and validity separately for each of the instruments: TROFLEI (Section 5.2.1.1); QTI (Section 5.2.1.2); and, SALEB (Section 5.2.1.3)

5.2.1.1 Technology-Rich Outcomes-Focused Learning Environment Inventory (TROFLEI)

To assess students' perceptions of the actual and preferred classroom learning environment, an 81-item, ten-scale version of the TROFLEI (Aldridge & Fraser, 2003) was used. Evidence to support the validity and reliability of the TROFLEI is summarised below.

- Principal axis factor analysis with oblique rotation, involving date collected using the TROFLEI, confirmed the 10 distinct *a priori* factors once 22 items (found to be problematic) were removed. The factor loadings for the remaining 59 items of the refined TROFLEI indicate that, without exceptions, all items loaded on their own scales at 0.40 or more and on all other scales at less than 0.40.

- The alpha reliability of ten TROFLEI scales ranged from 0.75 to 0.90 with the individual student as unit of analysis, and from 0.71 to 0.96 when using the class as the unit of analysis. This suggests satisfactory internal consistency for the TROFLEI when used with this sample.

- The discriminant validity, examined using the component correlation matrix generated during oblique rotation, shows that the highest inter-scale correlation was 0.28, thereby satisfying the criteria for satisfactory discriminant validity (Brown, 2006).

These results, related to the reliability and validity of the modified TROFLEI, were comparable with past research that has involved the TROFLEI (Aldridge & Fraser, 2000, 2008; Dorman, 2003; Koul et al., 2011; Waldrip & Fisher, 2003). While these studies have found the TROFLEI to be a reliable tool, it is recognised that most of these studies, including this one, used exploratory factor analysis to examine the factor structure. It is recommended, therefore, that in the future studies establish the validity of the TROFLEI by including the use of confirmatory factor analysis (Recommendation #1).

The evidence strongly supported the reliability and validity of the TROFLEI when used with college-level business students in the UAE. Whilst the TROFLEI has not been used previously in the UAE, the results are similar to those reported in other countries including: Australia (Aldridge & Fraser, 2008); Turkey and the USA (Welch, Cakir, Peterson & Ray, 2012) and New Zealand (Koul et al., 2011) and in numerous studies that have used questionnaires that have included many of the TROFLEI scales (including the WIHIC) (see, for example, studies by Aldridge & Fraser, 2000, 2008; Dorman, 2003; Koul et al., 2011).

5.2.1.2 *Reliability and validity of the QTI*

To assess students' perception of the nature and the quality of interpersonal relationships between teachers and students, a 48-item, eight-scale version of the QTI (Wubbels & Brekelmans, 1998; Wubbels & Levy, 1993) was used. Key findings for the evidence used to support the validity and reliability of the QTI is summarised below.

- The results of principle axis factor analysis with oblique rotation confirmed a revised version of the QTI with 39 items in the eight distinct *a priori* factors. For the revised factor structure, all but six items loaded at 0.40 or more on their own scale and less than 0.40 on all other scales. The exceptions were retained as they were found to improve reliability of the survey overall.
- The alpha reliability for different QTI scales ranged from 0.70 to 0.89 with the individual student as unit of analysis, and from 0.80 to 0.91 when using the class

as the unit of analysis. These results suggest satisfactory internal consistency for the QTI when used in the UAE.

- The highest inter-scale correlation (generated during oblique rotation) was 0.72, indicating that, although there was some overlap, the result satisfied the criteria for satisfactory discriminant validity based on the recommendation of Gurtman and Pincus (2000).

The results reported above support the reliability ad validity of the QTI when used in the UAE context. To the best of the researcher's knowledge the QTI instrument has not previously been used in the UAE and, therefore, it is not possible to compare this to other studies that have been carried out in the country. However, these findings largely replicate those of past studies that have used the QTI in other countries, including: Australia (Waldrip & Fisher, 2003); Korea (Kim, Fisher, & Fraser, 2000); the USA (Wubbels & Levy, 1993); New Zealand (Schofield, 2013); Singapore (Quek, Wong, & Fraser, 2005a); and, Brunei (Scott & Fisher, 2004).

Overall, the results, which support the reliability and validity of QTI when used with this sample, suggest that the subsequent results can be interpreted with confidence.

5.2.1.3 Reliability and validity of the SALES

To assess students' motivation and self-regulation in business learning, a modified version of the SALES (Velayutham, Aldridge, & Fraser, 2011), renamed the SALEB, was used.

- The results of exploratory factor analysis of the QTI indicate that there were no problematic items. All items had a factor loading of at least 0.40 on their *a priori* scale and less than 0.40 on all other scales.
- The Cronbach's alpha coefficient for different SALES scales ranged from 0.85 to 0.86 with the individual student as unit of analysis, and from 0.76 to 0.85 when using the class as the unit of analysis. These results suggest satisfactory internal consistency for the SALES when used for this sample.
- The discriminant validity of the SALEB, examined using the component correlation matrix generated during oblique rotation, suggest that the highest inter-scale correlation was 0.42, thereby satisfying the criteria for satisfactory discriminant validity recommended by Barclay et al. (1995).

The results for this study provide evidence to support the reliability and validity of the SALEB instrument when used in the UAE context. Importantly, the findings were comparable to results of the SALES (as opposed to the SALEB) when used in a study with high-school students in the UAE (by Rowntree, 2018), Further these finding replicate those of past studies that have used the SALES in other countries, including Australia (Velayutham, Aldridge, & Fraser, 2011) and Jordan (Alzubaidi et al., 2016).

The evidence provides strong support for the reliability and validity of the three instruments used in this study (TROFLEI, QTI and SALES) when used with this sample. These results served to establish that the data collected using the three instruments can be interpreted with confidence to address the research objectives.

5.2.2 Examining relationships: Motivation, learning environment perceptions and teacher interpersonal behaviour

The fourth research objective sought to:

Investigate whether relationships exist between students' motivation and self-regulation and their perceptions of the:

    a)   Learning environment; and
    b)   Teachers' interpersonal behaviour.

To address this objective, the sample of 220 students in 11 classes was analysed using simple correlations (r) and multiple regression (R) (see Chapter 3 for more information regarding the analysis). The major findings are summarised in terms of the relationship between college-level business students': perceptions of the learning environment and their motivation and self-regulation (Section 5.2.2.1); and perceptions of teachers' interpersonal behaviour and their motivation and self-regulation (Section 5.2.2.2).

5.2.2.1 Learning environment – Motivation and self-regulation relationships

To determine whether a relationship exists between college-level business students' perceptions of the learning environment and their self-reported motivation and self-regulation, data collected using TROFLEI and SALEB were used. The results of the analysis, using simple correlation and multiple regression analysis, are summarised below.

- The results of the simple correlation suggest that, with one exception (of the 40 possibilities) all 10 scales of the TROFLEI were statistically significantly ($p<0.05$) and positively related to all four SALEB scales. The exception was for Student Cohesiveness, which was non-significant.
- The multiple correlation (R) for the ten scales of the TROFLEI was statistically significant ($p<0.01$) and positive for all four SALES scales.
- Interpretation of the beta values (β) results indicate that:
    - Two TROFLEI scales were statistically significant ($p<0.05$) independent predictors of Learning Goal Orientation, these being Equity and Responsibility for Learning.
    - Two TROFLEI scales were statistically significant ($p<0.05$) independent predictors of Task Value, these being Investigation and Responsibility for Learning.
    - Four of the 10 TROFLEI scales were statistically significant ($p<0.05$) and positive independent predictors of Self-Efficacy, these being Equity, Differentiation, Computer Usage and Responsibility for Learning.
    - Four of the 10 TROFLEI scales were statistically significant ($p<0.05$) and positive independent predictors of Self-Regulation, these being Involvement, Task Orientation, Computer Usage and Responsibility for Learning.

The results of the findings are discussed below in terms of students': Learning Goal Orientation; Task Value; Self-Efficacy; and Self-Regulation.

First, the results indicated that students' perceptions of the learning environment is related to students' Learning Goal Orientation. As described in Chapter 2, Learning Goal Orientation is an important theoretical perspective that helps to explain the reasons why students engage in a task (Pintrich, 2000). The results indicate that two learning environment scales, Equity and Responsibility for Learning, were both independent predictors of Learning Goal Orientation ($p<0.05$). The finding highlights that, by treating students equitably and providing them with opportunities to take responsibility for their own learning, teachers are likely to also improve their sense of Learning Goal Orientation and, hence, their motivation to learn. The relationship between Equity and Learning Goal Orientation supports the work of Alzubaidi, Aldridge and Khine (2016), who propose that if teachers apply Equity strategies (e.g., students perceive that they get the same opportunity to contribute in class as other students), then the students are more likely to

be motivated in their learning process. The finding that Responsibility for Learning is related to students' sense of Learning Goal Orientation also corroborates the findings of studies carried out at the high-school level in the UAE (see, for example, Khalil, 2015, and Rowntree, 2018).

Second, the results indicate that two of the learning environment scales, Investigation and Responsibility for Learning, were independent predictors of Task Value ($p<0.05$). The finding highlights that when teachers include investigations in their teaching, students are more likely to value the task that is set. These findings support much past research in the field of learning environments across different subjects, including science (Velayutham, Aldridge & Fraser, 2012; Khalil, 2015; Rowntree, 2018), teaching English as a second language (Alzubaidi, 2014) and mathematics (Chipangura & Aldridge, in press; Skaalvik, Fererici, Wigfield, & Tangen, 2017). Given that one of the major frameworks that motivates achievement is the task value and the expectancy-value theory (Eccles & Wigfield, 1995), this is an important finding for business classes in the UAE.

Third, the results of my study indicate that four TROFLEI scales were independent predictors of Self-Efficacy ($p<0.05$): Equity, Differentiation, Computer Usage and Responsibility for Learning. As described in Chapter 2, self-efficacy is one's belief in one's ability to achieve a goal or an outcome (Bandura, 1997). According to Bandura (1997), self-efficacy determines how people feel, think, motivate themselves and act – and, therefore, is an important attribute for students. If students believe that they can achieve the desired results, then they are more likely to have incentives to learn (Bandura, 1986). The findings of the study reported in this thesis highlight the importance of the learning environment created by the teacher and its impact on student self-efficacy. Importantly, these findings suggest that when students feel that they can engage with work that suits their ability (as assessed by the Differentiation scale), are treated equitably (as assessed by the Equity scale) and are encouraged to take responsibility for their own learning (as assessed by the Responsibility for Learning scale), their sense of efficacy is increased.

The impact of the learning environment on students' self-efficacy is a growing area of research within the field and the findings of this study support much previous research at the primary-school level (Galos & Aldridge, 2019), high-school level (Aldridge, Fraser, Bell & Dorman, 2012; Bell & Aldridge, 2014), tertiary level (Afari et al, 2013; Alzubaidi, Aldridge & Khine, 2016) and in a range of subject areas (Dorman, 2001). The results of

the study reported in this thesis corroborate other learning environment studies that have also found students' perceptions of the learning environment to be related to student self-efficacy (for example, Aluri, 2018; Galos, 2018; Pearson, 2008). Of interest is the relationship between the Computer Usage scale and self-reports of self-efficacy. Given the potential for computer use in business education to provide opportunities for differentiating learning (thereby making courses more equitable) and to provide students with responsibility for their learning, this was an important finding.

The results of the study reported in this thesis also indicate that four TROFLEI scales were statistically significant ($p<0.05$), independent predictors of Self-Regulation: Involvement, Task Orientation, Computer Usage and Responsibility for Learning. Pintrich (2000, p. 453) describes self-regulated learning as the 'active, constructive process whereby learners set goals for their learning and then attempt to monitor, regulate, and control their cognition, motivation, and behaviour, guided and constrained by their goals and the contextual features in the environment'. The importance of self-regulation for successful learning is well-established (see, for example, Hindman, Skibbe, Miller, & Zimmerman, 2010; Matthews, Ponitz, & Morrison, 2009; Montroy, Bowles, Skibbe, & Foster, 2014; Schunk & Zimmerman, 2007). As a student regulates his or her own learning, he or she will experience increased independence and proficiency, increasingly developing, adapting and accessing learning opportunities beyond those envisioned by his or her teachers (Ramdass & Zimmerman, 2011; Winne, 1997). The results reported in this theses indicate that the extent to which students were involved in their learning (as assessed by the Involvement scale), know the goal of their classes (as assessed by the Task Orientation scale), use the computer for their studies (as assessed by the Computer Usage scale) and consider themselves to be responsible are important factors that can affect students' self-regulation and, hence, their motivation to learn. These findings also suggest that when students feel that they can give their opinion, have the opportunity to understand the work, use the computer for their studies and positively interact with them during lessons, they are more self-regulated. Overall, these findings support past studies that have found that learning environment perceptions were a predictor of self-regulation, including in mathematics (Chipangura & Aldridge, in press) and science (Velayutham & Aldridge, 2013; Khalil, & Aldridge, in press) and in cooperative learning settings (Rowntree, 2018).

Overall, the results indicate that students' perception of the learning environment at the college level in the UAE positively influences their motivation and engagement, thereby

supporting previous research (Afari, 2013; Afari et al., 2013; Alzubaidi et al., 2016; Chipangura & Aldridge, 2017; Fraser, 2012; Jinks & Lorsbach, 2003; Opolot-Okurut, 2010; Tas, 2016; Velayutham & Aldridge, 2013). The results reported in this thesis add to these studies, as they are produced by the first study to be carried out in business classes in the UAE.

5.2.2.2 *Teacher interpersonal behaviour: Motivation relationships*

As with the previous section, simple correlation and multiple regression analyses involving the data from 220 college-level business students were used to determine whether relationships exist between the eight scales of the QTI (Leadership, Uncertainty, Understanding, Admonishing, Helpful and Friendly, Student Freedom and Responsibility, Dissatisfied and Strict) and the four scales of the SALEB (Learning Goal Orientation, Task Value, Self-Efficacy and Self-Regulation). The results are summarised below.

- The results of the simple correlation suggest that all eight dimensions of teacher interpersonal behaviour, as assessed using the QTI, were related to students' motivation and self-regulation, as assessed by the SALEB.
- The multiple correlation (R) for the eight scales of the QTI was positive and statistically significant ($p<0.01$).
- The beta values (β) indicated that:
  - One of the QTI scales, Leadership, was a statistically significant ($p<0.05$) independent predictor of Learning Goal Orientation.
  - Three QTI scales were statistically significant ($p<0.05$) independent predictors of Task Value.
    - For two of these scales, Leadership and Helpful and Friendly, the relationship was positive.
    - For the third scale, Dissatisfied, the relationship was negative.
  - One of the QTI scales, Dissatisfied, was a statistically significant ($p<0.05$) and negative independent predictor of Self-Efficacy.
  - Three QTI scales were statistically significant ($p<0.05$) independent predictors of Self-Regulation.
    - For two scales, Leadership and Student Freedom and Responsibility, the relationship was positive.
    - For the third scale, Dissatisfied, the relationship was negative.

Overall, teachers' interpersonal behaviour appears to impact on student's engagement. These findings are consistent with other studies that found interpersonal behaviour to impact on student outcomes including attitudes (den Brok, Fisher & Scott, 2005), achievement (Fisher, Rickards & Fraser, 1996), enjoyment (Scott & Fisher, 2001), and students' emotions and behaviour (Poulou, 2014, 2015). In particular, the findings of this study support past studies that found a relationship between teacher interpersonal behaviour and student motivation (Misbah, Gulikers, Maulana & Mulder, 2015) and student engagement (Van Uden, Ritzen, & Pieters, 2014). Specifically, in this study, carried out in the UAE, four interpersonal behaviours impacted on students' engagement: Leadership; Helpful and Friendly; Student Freedom; and Dissatisfied behaviours. Each of these is discussed below.

The first QTI scale that was influential in terms of student motivation and self-regulation was Leadership. Teachers engage in a wide range of activities and roles that may involve leadership. The quality of teacher is an important factor in the learning environment. According to Brekelmans, Levy and Rodriguez (1993), authoritative teachers have a well-structured and pleasant classroom. They have set rules and procedures and the students in the class are attentive and on task. The results of this study, which indicates that Leadership is an independent predictor of Learning Goal Orientation, Task Value and Self-Regulation ($p<0.05$), highlights that teacher Leadership is an important factor that can affect students' motivation to learn. These findings also suggest that, when the teacher is a good leader and knows everything that goes in the business classroom, the students are more likely to understand their work, see what is interesting about what they are learning and are more motivated. The finding that teachers' leadership qualities impact on student outcomes supports those of previous studies (Wesselink et al., 2007; Guo, Connor, Yang, Roehrig, & Morrison, 2012).

The second QTI scale that was influential in terms of student motivation and self-regulation was Helpful and Friendly behaviour. That is, when a teacher is willing to explain things again and help the students with their work, shows interest, behaves in a friendly or considerate manner and inspires confidence and trust, the teacher is displaying Helpful and Friendly behaviour. Those teachers who are viewed as having Helping and Friendly behaviours are likely to also be Understanding (Wubbels, Créton, Levy & Hooymayers, 1993). The results of the present study indicate that Helpful and Friendly behaviour is an independent predictor of Task Value ($p<0.05$). That is, the more a teacher

displays Helpful and Friendly behaviours, the more likely it is that students will value the tasks that are provided. These findings support those of previous studies which have found a positive relationship between the Helping and Friendly behaviours and student outcomes (den Brok, Levy, Brekelmans & Wubbels, 2005; Pianta, 1999; van den Oord & Van Rossem, 2002; Gordon, Dembo & Hocevar, 2007).

The third QTI scale that was influential in terms of student motivation and self-regulation was Student Freedom. This interpersonal behaviour examines the opportunities for independent work, provides high levels of freedom and the ability to influence decisions related to the curriculum in the classroom. For those teachers that provide Student Freedom, the teacher gets personally involved in their students' learning and the students can work at their own pace, according to their preferred learning style (Brekelmans, Levy & Rodriguez, 1993). The results reported in this thesis indicate that the Student Freedom and Responsibility behaviour is an independent predictor of Self-Regulation ($p<0.05$). This finding supports those of Wiginton (2013) and highlights that when students are given responsibility and a sense of control over their own learning, they are more likely to be self-regulated. This important component of student agency can be promoted, according to the results, by increasing the opportunities for students to do independent work.

Finally, the fourth QTI scale that was influential in terms of student motivation and self-regulation was Dissatisfied behaviour. A teacher who exhibits Dissatisfied teacher behaviours is likely to exhibit these behaviours both in terms of body language (such as looking unhappy) and other behaviours (such as being critical of students, or giving students a sense that they will not succeed). The results reported in this thesis indicate that the Dissatisfied interpersonal behaviour is an independent predictor of Task Value, Self-Efficacy and Self-Regulation ($p<0.05$), the relationships for which are all negative. That is, students who perceive teachers as demonstrating more Dissatisfied behaviours are less likely to feel a sense of self-efficacy, value the tasks or be self-regulated in their learning. These findings support past research that has examined the impact of teachers' beliefs about the students on student performance, indicating that if teachers do not exhibit behaviours that indicate that the students will succeed then this will act as a self-fulfilling prophecy (López, 2017).

5.2.3   *Actual–preferred differences in learning environment perceptions*

The fifth research objective was:

To investigate whether actual and preferred differences exist for the perceptions of the learning environment.

To investigate whether actual and preferred differences exist for perceptions of the learning environment, a quantitative method approach, involving the collection of data via TROFLEI, was used. The quantitative sample involved 220 students (120 first-year students and 100 third-year students) and 11 business teachers. One-way MANOVA (with the individual unit of analysis) was used to examine whether the differences between actual and preferred responses for the TROFLEI were statistically significant. To examine the magnitudes of the differences, effect sizes were calculated. The results of the analysis, using the average item mean between actual and preferred perceptions on the TROFLEI, are summarised below.

- The actual-preferred results were statistically significant ($p<0.01$) for nine of the 10 TROFLEI scales, the exception being Cooperation.
- The results indicate that, for all scales, students would prefer a more favourable learning environment than they perceive to be present.
- The effect sizes, for scales that had statistically significant differences, range between approximately 0.51 of a standard deviation for the Computer Usage scale and 0.92 standard deviations for the Involvement and Investigation scales. These results suggest educationally important differences between the actual and preferred learning environment.

As summarised above, the findings indicate that, for nine of the 10 TROFLEI scales, students would prefer a more positive learning environment than they currently perceive as being in place.

There has been much research that has found differences between the actual and preferred perceptions of the learning environment, and the research reported in this thesis supports this earlier work. In the vast majority of cases, students scored higher for the preferred environment than for the actual or perceived environment, indicating that they would prefer their environment to be more favourable in terms of the dimensions assessed. This finding was the case for studies carried out at the primary-school level (for example, Goh

& Fraser, 2016; Galos & Aldridge, 2019; Majeed, Fraser & Aldridge, 2002; and Aldridge, Fraser, & Ntuli 2009), high-school level (Hofstein & Lazarowitz, 1986; Hofstein, Cohen & Lazarowitz, 1996; Puacharearn, 2004), and tertiary level (Fraser & Treagust, 1986; Fraser, Treagust & Dennis, 1986; Brown et al., 2011; Santiboon, 2006; Phillips, Mathew & Aktan, 2019; Papathanasiou, Tsaras & Sarafis, 2014).

Given that students would prefer a more favourable learning environment than they perceive to be present for all but one of the TROFLEI scales, with the strongest responses being for Involvement, Investigation and Teacher Support, it is recommended that teachers in business classes look for ways to include opportunities for students to be involved in class discussions, carry out investigations and receive help from their teacher when they have trouble with their work (Recommendation #2). Much past research has suggested measures to improve the learning environment, based on actual and preferred perceptions (Fraser & Aldridge, 2017); however, few of these have been carried out at the tertiary level and, to the best of the researcher's knowledge, none have been carried out in college-level business classes. It is recommended, therefore, that future studies consider examining the efficacy of improving the learning environment, using student feedback, in college-level business classes (Recommendation #3).

5.2.4 *Differences in teachers' and students' views of teacher interpersonal behaviour*

The sixth research objective was:

To investigate whether differences exist between the perceptions of teachers and students in terms of the teacher's interpersonal behaviour.

One way MANOVA was used to investigate the statistical significance of the differences between students and teacher responses was by using effect sizes to describe the magnitude or educational importance of those differences. The students' class mean and the teachers' scores were used as the unit of analysis. The results are summarised below.

- The results indicate that there was a statistically significant ($p<0.01$) difference between students' and teachers' perceptions of the teachers' interpersonal behaviour for all eight QTI scales.
- For three of the eight QTI scales, teachers scored higher than did students, these being Leadership, Understanding, and Helpful and Friendly.

- For the remaining five QTI scales, the students scored higher than did teachers, these being Uncertainty, Admonishing, Student Responsibility and Freedom, Dissatisfied, and Strict.
- The effect sizes for these differences ranged from just over three-quarters of a standard deviation (for the Understanding scale) to 4.23 standard deviations (for the Dissatisfied scale). According to Cohen (1988), these values can be considered medium to large in effect.

Interestingly, the findings indicate that students perceive their teachers to display higher levels of Uncertainty, Admonishing, Responsibility, Dissatisfied, and Strict than do teachers. Conversely, students perceive lower levels of Leadership, Understanding and Helping/Friendly than do their teachers. These findings, overall, generally supported past research which found similar patterns; see, for example, studies carried out by McCroskey and Richmond (1982), Fisher and Fraser (1983), Könings, Seidel, Brand-Gruwel and Van Merriënboer (2014), Yoke Chene Lee (2010) and Quek, Wong and Fraser (2005a). In all of these studies, findings were similar insofar as teachers were more likely to score behaviours that could be considered positive (such as Leadership, Helpful and Friendly) as occurring more often than did students and students were more likely to score behaviours that might be considered negative (such as Dissatisfied) as occurring more often than did teachers.

These findings have implications for teachers of business courses in the UAE. The findings suggest that these teachers may be assuming that students' have a different experience in their classrooms than they actually do. As a result of these findings, it is suggested that teachers might conduct the QTI in their own class and receive feedback, on an individual basis, about their interpersonal behaviour. Given that past research has indicated that teachers can successfully improve their environment, including the relationships between the students and the teachers (see for example, Fraser & Aldridge, 2017), it is recommended that teachers in business classes use this information to inform and improve their interpersonal relationships with their students (Recommendation 4). It is also recommended that future studies examine whether adapting a teacher's interpersonal behaviours can lead to improved outcomes (Recommendation 5).

5.2.5   *Differences between the perceptions and self-reports of first- and third-year students*

The seventh research objective was:

To investigate whether differences exist for first and third year students in terms of:

a) Learning environment perceptions;

b) Teacher interpersonal behaviour; and

c) Self-reports of motivation and self-regulation.

Of the 220 students involved in the present study, 120 were from first year and 100 from third year. To examine differences in terms of perceptions of the learning environment and motivation and self-regulation, one-way multivariate analysis of variance (MANOVA) and effect sizes were used. This section summarises the results for the learning environment perceptions (Section 5.2.6.1), teacher interpersonal behaviour (Section 5.2.6.2) and student motivation (Section 5.2.6.3).

5.2.5.1   *Learning environment*

The results of the analysis are summarised below.

*   The average item mean indicated that third-year students scored higher than first-year students for all scales except for Student Cohesiveness.

*   The results indicate that there was a statistically significant ($p<0.05$) difference between first- and third-year students' perceptions of the learning environment for four of the 10 TROFLEI scales, these being Involvement, Task Orientation, Investigation, and Differentiation.

*   The effect sizes for those scales with a statistically significant difference ranged from 0.27 standard deviations for the Investigation scale to 0.35 standard deviations for Student Involvement, Task Orientation, and Differentiation. According to Cohen's (1988) criteria, the magnitudes of these differences fall in the small to medium range.

These findings suggest that students' perception of the learning environment changed as they moved through from first to third year. Given the quantitative nature of the research, causal explanations were not possible. However, in the experience of the researcher, it is possible that, in the first year of study (when students are less mature and new to college

life), teachers provide fewer opportunities for student-centred activities. In most cases, students come to college direct from high school where, at the time of this study, the nature of classrooms was largely teacher-centred. Conversely, by the time that students are in their third year of study, the business course curriculum provides project-based learning activities and, providing students with more student-centred activities.

The findings indicate that, by the time that students reach the third year of their studies, they are more likely to be able to express their opinion during business classes, better understand the goals of their class, are more likely to carry out investigations and teachers are more likely to provide differentiated learning activities. Given the results of Research Objective 2, which suggest positive correlations between the nature of the learning environment (as assessed by the TROFLEI scales) and student motivation and engagement perceptions, it is recommended that curriculum developers and teachers of business classes consider the use of student-centred activities (Recommendation 6).

Interestingly, there was no difference in the perceptions of student Cohesiveness for first- and third-year students. A study by Urdan and Schoenfelder (2006) indicated that the relationships between students are an important dimension in the classroom. They suggest that when the teacher creates learning environments in which students are given opportunities to work together and to interact, they get to know each other well and establish relationships. It would appear in this case, however, that the social bonds between students were not affected by the types of activities that were provided in class. Despite this, given that social cohesiveness, according to the results of Research Objective 2, as well Ryan and Patrick (2001), is likely to increase motivation and self-regulation, it is recommended that teachers consider how they might improve these (Recommendation 7).

5.2.5.2 *Teacher interpersonal behaviour*

The results indicated that third-year students scored higher for Leadership, Uncertainty, Understanding, Help and Friendly, and Strict, whereas first-year students scored higher for Admonishing, Student Freedom, and Dissatisfied. Despite these differences in item means, the results of the MANOVA indicated that there were no statistically significant differences between the perceptions of first- and third-year students with respect to the teachers' interpersonal behaviour. It would appear, therefore, that the interpersonal behaviours do not differ across year levels. Given that there are no previous studies that

have used the QTI to compare teacher behaviour across different grade levels, it was not possible to compare these findings with other research.

5.2.5.3 *Motivation and self-regulation*

As with the results for the QTI, although third-year students scored slightly higher for all four scales (Learning Goal Orientation, Task Value, Self-Regulation, and Self-Efficacy), the MANOVA results did not show a statistically significant difference. The findings indicate that although there is a strong relationship between the learning environment and student motivation and engagement, students' motivation and engagement did not change between first and third year.

5.3   Limitations of the study

As with all research, the study reported in this thesis was not free of limitations. This section recognises the presence of limitations in the study and how they were minimised. In addition the section provides recommendations about how to minimise their effects in future studies.

Although sound evidence was provided to support the reliability and validity of the three surveys used in this study, it is noted that the analyses involved the use of exploratory factor analysis to examine the factor structure. While this analysis is useful in an exploratory study, such as the one reported in this thesis, it is recommended that, to provide additional evidence for the validity of the TROFLEI, future studies consider using confirmatory factor analysis (Recommendation 1).

Given that the college was an all-female campus (coeducational colleges are not permitted in the UAE), the sample included only females. Although the sampling procedure involved stratified random sampling to increase the generalisability of the results (as recommended by, Särndal et al., 2003), it would be beneficial for future studies to involve a cross-section of both male and female colleges to increase the generalisability of the results (Recommendation 8)

The sample for the present study involved a single administration to students enrolled in first and third year. Although this provided some valuable information, it was not possible to determine whether the findings were the result of changes in year level or an artefact of the two samples. Although a longitudinal study was outside the scope of the present study, this would have provided more accurate data about the changes from first to third

year. It is recommended, therefore, that future studies examining differences between the perceptions and self-reports of students at different stages of their enrolment consider a longitudinal design (Recommendation 9).

Since the data for the present study was gathered from a women's college (all-female), generalising the findings to colleges in other emirates or, indeed, to all-male colleges should be done with caution. Further, it is recognised that the teachers sample (*N*=11) limits the generalisability of the study. To overcome this, it is recommended that future studies involve a larger and wider sample of students and teachers. This increased sample might include participants from other emirates in the UAE and from a mixture of all-male and all-female campuses (Recommendation 10).

The quantitative data collected to address the research objectives in this study was drawn only from business classes in the UAE; therefore, generalisations to other subject areas should be made with caution. It is recommended that future studies investigating outcome-focused education in a technology-rich learning environment in business courses in the UAE include other subjects, such as English and mathematics (Recommendation 11).

The evidence provided to support the reliability and validity of the three surveys was consistent with much past research and provided detailed information about the surveys in terms of internal consistency, discriminant validity and concurrent validity. It is acknowledged however, that the use of confirmatory factor analysis and inter-rater reliability would strengthen this evidence base. It is recommended, therefore, that future studies include evidence related to confirmatory factor analysis and inter-rater reliability (Recommendation 12).

5.4   Recommendation for future research

This section summarises the recommendations of the study.

Recommendation 1	It is recommended that future studies establish the validity of the TROFLEI further by including the use of confirmatory factor analysis, as it is recognised that most studies, including this one, have used exploratory factor analysis to examine the factor structure (see Section 5.2.1.1).

Recommendation 2   It is recommended that teachers in business classes look for ways to include opportunities for students to be involved in class discussions, carry out investigations and received help from their teacher when they have trouble with their work (see Section 5.2.4).

Recommendation 3   It is recommended, therefore, that future studies consider examining the efficacy of improving the learning environment using student feedback in college-level business classes (see Section 5.2.4).

Recommendation 4   Given that past research has indicated that teachers can successfully improve their environment, including the relationships between the students and the teachers, it is recommended that teachers in business classes gather and use information related to students perceptions of the interpersonal behaviour to inform and improve their interpersonal relationships with their students (see Section 5.2.5).

Recommendation 5   It is recommended that future studies examine whether adapting teachers' interpersonal behaviours can lead to improved outcomes (see Section 5.2.5).

Recommendation 6   It is recommended that curriculum developers and teachers of business classes consider the use of student-centred activities (see Section 5.2.6.1).

Recommendation 7   Given that social cohesiveness, according to the results of Research Objective 2, is likely to increased motivation and self-regulation, it is recommended that teachers consider how they might improve these factors (see Section 5.2.6.1).

Recommendation 8   It is recommended that similar studies be carried out in a cross-section of male and female colleges to increase the generalisability of the findings (see Section 5.3).

Recommendation 9   It is recommended that future studies examining differences between the perceptions and self-reports of students at different stages of their enrolment consider a longitudinal design (see Section 5.3).

Recommendation 10   It is recommended, that future studies involve a larger and wider sample of students and, particularly, teachers, from other emirates in the UAE (see Section 5.3).

Recommendation 11   It is recommended that future studies investigating the learning environment at the tertiary level in the UAE include other subjects, such as English and mathematics (see Section 5.3).

Recommendation 12   It is recommended that future studies investigating the Learning environment at the tertiary level in the UAE include inter-rater reliability (see Section 5.3).

5.5   Significance of the research

As described in Chapter 1, an important contribution of the research reported in this thesis, is the evidence that was provided to support the reliability and validity of three instruments when used in business classes at the college level in the UAE. To date, there have been few surveys made available for use at the tertiary level in the UAE; therefore, the validation of these surveys make available, to both teachers and researchers, an economical and efficient means to collect data related to classroom environmental features, teacher interpersonal behaviours and students' motivational and self-regulation beliefs.

This study has extended the field of learning environments as it is one of the first studies of its kind to examine student's perceptions of the learning environment, teacher interpersonal behaviour and their engagement in business courses in the UAE. Few studies have examined the learning environment and teacher interpersonal behaviour in the same study (see, for example, Rickards, den Brok, & Fisher, 2005) and none have been carried out in the UAE. Therefore, this study has contributed to the literature on the relationships between these variables as well as actual–preferred and grade-level differences. Further, the study is of significance because the results contribute to understanding of the impact of the learning environment from a Middle Eastern perspective.

This study is significant for stakeholders of the college from which the sample is drawn, from two perspectives: the contribution made to the business teachers working in business classes (Section 5.5.1) and the broader contribution to policy-makers at the tertiary level and other education in the UAE (Section 5.5.2).

5.5.1 Contribution to teachers in business classes

The results of this study have significance for business teachers working in business classes in several ways. While the findings are directly applicable to business teachers, it is possible that they may also be of use for teachers of other subjects.

First, teachers will have access to three questionnaires that have been utilised in the same educational context and culture: the TROFLEI (to assess students' perceptions of their learning environment, the QTI (to assess students' perception of the nature and the quality of interpersonal relationships between teachers and students) and the SALEB (to assess students' motivation and self-regulation). These instruments can provide teachers with a snapshot of how students perceive their learning environment and teacher interpersonal behaviour, as well as subsequent influences that these perceptions may have on motivation. The ability to gather data on students' viewpoints has significance for teachers in business classes in the UAE who have not previously had access to such measures.

Second, the positive impact of the learning environment and teacher interpersonal behaviour on students' motivation, self-regulation, as shown in this study, has significance for teachers wanting to improve students' motivation and self-regulation in their business classrooms. It should be noted that, when students are motivated and self-regulated, they are likely to have improved achievement outcomes (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000).

The findings of this study have further practical significance for teachers. The two learning environment dimensions, Equity and Responsibility for Learning, that were found to have a positive influence on motivation, indicate that when students get the same amount of help from the teacher as do other students, or enjoy the same opportunity to contribute to class discussions as other students and take responsibility for their own learning, student motivation may be improved.

A further practical implication of this study is the finding that the learning environment constructs of Involvement, Task Orientation, Computer Usage, and Responsibility for Learning had a positive influence on self-regulation. For teachers wishing to improve students' self-regulation, these findings are of practical significance, suggesting that when students get the same amount of help from the teacher as do other students, or enjoy the same opportunity to contribute to class discussions as other students and take

responsibility for their own learning, they are more likely to be self-regulated in their learning.

In addition, the finding that students in classes with teachers who exhibit more Leadership, Helpful and Friendly, Student Freedom, and Satisfied behaviours had higher levels of motivation and self-regulation could be of practical significance to teachers wanting to improve student outcomes.

A significant contribution of this study for teachers is the potential for increased computer use in business classes to provide teachers with the ability to effectively make available differentiated or individualised learning for students (as assessed by the differentiation scale); help students to be more involved in their learning, for example through project work (as assessed by the Involvement scale); and provide students with opportunities to be responsible for their own learning (as assessed by the Responsibility for Learning scale). The findings, which suggest that these dimensions of the learning environment influence students' motivation, could be leveraged by teachers through increased computer use to promote student engagement in business classes.

5.5.2 Contribution to policy-makers

The finding of this study, that students' perception of the learning environment influenced their motivation in business classes, implies that attention should be paid at the policy-maker and college administrator level to the learning environment within college-level business subjects.

Given the potential for computer use in education to provide opportunities for differentiation of and involvement in learning – thereby making courses more equitable, which is found to influence students' motivation– this research provides important information for curriculum developers and educators. In both cases, these results suggest that the business curriculum should include activity- or project-based learning to increase the students' motivation.

Further, the findings of this research will be of significance to professional development providers wishing to encourage business teachers to promote student motivation and engagement. The results provide information about where professional development providers might concentrate their efforts to promote a good understanding of how teachers can encourage this.

At the college-level, the findings could be used to drive future decisions associated with policies in education and strategies for teaching and learning. Subsequent changes could be made to the psychosocial environment in order to develop students' motivation towards learning, not only in business but across all subject areas.

While this study was situated within a women's college in one of the UAE emirates, the findings are likely to be relevant for other colleges across the UAE, as well as other Middle Eastern countries wanting to improve students' motivation and self-regulation in business courses. The findings from this study could be of use to other education policy-makers when considering current or potential influences on students' motivation and self-regulation.

5.6   Concluding remarks

This study is significant to the field of learning environments and business education because it is the first study of its kind to examine education in business courses in the UAE. Additionally, it is the first study to provide evidence for the reliability of the newly-developed TROFLEI, SALE and QTI instruments, making it suitable for use in other studies.

The focus of this study was on business learning environment, and the findings could help educators improve their learning environments in business and other subject areas. These findings have implications for researchers, policy-makers, organisations, college administration and teachers wishing to improve the learning environment and student attitude and outcomes. It is anticipated that the research presented in this thesis will provide valuable information that can help to transform future business classrooms for the benefit of all stakeholders. Ultimately, these findings can be used in the future to help to transform business classrooms in ways that motivate and engage learners.

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TECHNOLOGY-RICH OUTCOME-FOCUSED LEARNING ENVIRONMENTS INVENTORY (TROFLEI)

		Actual					Preferred				
	Student Cohesiveness	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
1	I make friends among students in this class.	1	2	3	4	5	1	2	3	4	5
2	I know other students in this class.	1	2	3	4	5	1	2	3	4	5
3	I am friendly to members of this class.	1	2	3	4	5	1	2	3	4	5
4	Members of the class are my friends.	1	2	3	4	5	1	2	3	4	5
5	I work well with other class members.	1	2	3	4	5	1	2	3	4	5
6	I help other class members who are having trouble with their work.	1	2	3	4	5	1	2	3	4	5
7	Students in this class like me.	1	2	3	4	5	1	2	3	4	5
8	In this class, I get help from other students.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Teacher Support	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
9	The teacher takes a personal interest in me.	1	2	3	4	5	1	2	3	4	5
10	The teacher goes out of his/her way to help me.	1	2	3	4	5	1	2	3	4	5
11	The teacher considers my feelings.	1	2	3	4	5	1	2	3	4	5
12	The teacher helps me when I have trouble with the work.	1	2	3	4	5	1	2	3	4	5
13	The teacher talks with me.	1	2	3	4	5	1	2	3	4	5
14	The teacher is interested in my problems.	1	2	3	4	5	1	2	3	4	5
15	The teacher moves about the class to talk with me.	1	2	3	4	5	1	2	3	4	5
16	The teacher's questions help me to understand.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Involvement	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
17	I discuss ideas in class.	1	2	3	4	5	1	2	3	4	5
18	I give my opinions during class discussions.	1	2	3	4	5	1	2	3	4	5
19	The teacher asks me questions.	1	2	3	4	5	1	2	3	4	5
20	My ideas and suggestions are used during classroom discussions.	1	2	3	4	5	1	2	3	4	5
21	I ask the teacher questions.	1	2	3	4	5	1	2	3	4	5
22	I explain my ideas to other students.	1	2	3	4	5	1	2	3	4	5
23	Students discuss with me how to go about solving problems.	1	2	3	4	5	1	2	3	4	5
24	I am asked to explain how I solve problems.	1	2	3	4	5	1	2	3	4	5

		Actual					Preferred				
	Task Orientation	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
25	Getting a certain amount of work done is important to me.	1	2	3	4	5	1	2	3	4	5
26	I do as much as I set out to do.	1	2	3	4	5	1	2	3	4	5
27	I know the goals for this class.	1	2	3	4	5	1	2	3	4	5
28	I am ready to start this class on time.	1	2	3	4	5	1	2	3	4	5
29	I know what I am trying to accomplish in this class.	1	2	3	4	5	1	2	3	4	5
30	I pay attention during this class.	1	2	3	4	5	1	2	3	4	5
31	I try to understand the work in this class.	1	2	3	4	5	1	2	3	4	5
32	I know how much work I have to do.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Investigation	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
33	I carry out investigations to test my ideas.	1	2	3	4	5	1	2	3	4	5
34	I am asked to think about the evidence for statements.	1	2	3	4	5	1	2	3	4	5
35	I carry out investigations to answer questions coming from discussions.	1	2	3	4	5	1	2	3	4	5
36	I explain the meaning of statements, diagrams and graphs.	1	2	3	4	5	1	2	3	4	5
37	I carry out investigations to answer questions that puzzle me.	1	2	3	4	5	1	2	3	4	5
38	I carry out investigations to answer the teacher's questions.	1	2	3	4	5	1	2	3	4	5
39	I find out answers to questions by doing investigations.	1	2	3	4	5	1	2	3	4	5
40	I solve problems by using information obtained from my own investigations.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Cooperation	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
41	I cooperate with other students when doing assignment work.	1	2	3	4	5	1	2	3	4	5
42	I share my books and resources with other students when doing assignments.	1	2	3	4	5	1	2	3	4	5
43	When I work in groups in this class, there is teamwork.	1	2	3	4	5	1	2	3	4	5
44	I work with other students on projects in this class.	1	2	3	4	5	1	2	3	4	5
45	I learn from other students in this class.	1	2	3	4	5	1	2	3	4	5
46	I work with other students in this class.	1	2	3	4	5	1	2	3	4	5
47	I cooperate with other students on class activities.	1	2	3	4	5	1	2	3	4	5
48	Students work with me to achieve class goals.	1	2	3	4	5	1	2	3	4	5

		Actual					Preferred				
	Equity	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
49	The teacher gives as much attention to my questions as to other students' questions.	1	2	3	4	5	1	2	3	4	5
50	I get the same amount of help from the teacher as do other students.	1	2	3	4	5	1	2	3	4	5
51	I have the same amount of say in this class as other students.	1	2	3	4	5	1	2	3	4	5
52	I am treated the same as other students in this class.	1	2	3	4	5	1	2	3	4	5
53	I receive the same encouragement from the teacher as other students do.	1	2	3	4	5	1	2	3	4	5
54	I get the same opportunity to contribute to class discussions as other students.	1	2	3	4	5	1	2	3	4	5
55	My work receives as much praise as other students' work.	1	2	3	4	5	1	2	3	4	5
56	I get the same opportunity to answer questions as other students.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Differentiation	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
57	I work at my own speed.	1	2	3	4	5	1	2	3	4	5
58	Students who work faster than me move on to the next topic.	1	2	3	4	5	1	2	3	4	5
59	I am given a choice of topics.	1	2	3	4	5	1	2	3	4	5
60	I am set tasks that are different from other students' tasks.	1	2	3	4	5	1	2	3	4	5
61	I am given work that suits my ability.	1	2	3	4	5	1	2	3	4	5
62	I use different materials from those used by other students	1	2	3	4	5	1	2	3	4	5
63	I use different assessment methods from other students.	1	2	3	4	5	1	2	3	4	5
64	I do work that is different from other students' work.	1	2	3	4	5	1	2	3	4	5
		Actual					Preferred				
	Computer Usage	Almost Never	Seldom	Some times	Often	Almost Always	Almost Never	Seldom	Some times	Often	Almost Always
65	I use the computer to type my assignments.	1	2	3	4	5	1	2	3	4	5
66	I use the computer to email assignments to my teacher.	1	2	3	4	5	1	2	3	4	5
67	I use the computer to ask the teacher questions.	1	2	3	4	5	1	2	3	4	5
68	I use the computer to find out information about the course.	1	2	3	4	5	1	2	3	4	5
69	I use the computer to read lesson notes prepared by the teacher.	1	2	3	4	5	1	2	3	4	5
70	I use the computer to find out information about how my work will be assessed.	1	2	3	4	5	1	2	3	4	5
71	I use the computer to take part in on-line discussions with other students.	1	2	3	4	5	1	2	3	4	5
72	I use the computer to obtain information from the Internet.	1	2	3	4	5	1	2	3	4	5

		Actual					Preferred				
	Responsibility for Learning	**Almost Never**	**Seldom**	**Some times**	**Often**	**Almost Always**	**Almost Never**	**Seldom**	**Some times**	**Often**	**Almost Always**
73	I am treated like a young adult.	1	2	3	4	5	1	2	3	4	5
74	I am given responsibility.	1	2	3	4	5	1	2	3	4	5
75	I am expected to think for myself.	1	2	3	4	5	1	2	3	4	5
76	I am dealt with as a grown up.	1	2	3	4	5	1	2	3	4	5
78	I am regarded as reliable.	1	2	3	4	5	1	2	3	4	5
79	I am considered mature.	1	2	3	4	5	1	2	3	4	5
80	I am given the opportunity to be independent.	1	2	3	4	5	1	2	3	4	5
81	I am encouraged to take control of my own learning.	1	2	3	4	5	1	2	3	4	5

QUESTIONNAIRE ON TEACHER INTERACTION (QTI) – STUDENT VERSION

		Almost Never	Seldom	Some times	Often	Almost Always
1	This teacher talks enthusiastically about her/his subject.	1	2	3	4	5
2	This teacher trusts us.	1	2	3	4	5
3	This teacher seems uncertain.	1	2	3	4	5
4	This teacher gets angry unexpectedly.	1	2	3	4	5
5	This teacher explains things clearly.	1	2	3	4	5
6	If we don't agree with this teacher, we can talk about it.	1	2	3	4	5
7	This teacher is hesitant.	1	2	3	4	5
8	This teacher gets angry quickly.	1	2	3	4	5
9	This teacher holds our attention.	1	2	3	4	5
10	This teacher is willing to explain things again.	1	2	3	4	5
11	This teacher acts as if she/he does not know what to do.	1	2	3	4	5
12	This teacher is too quick to correct us when we break a rule.	1	2	3	4	5
13	This teacher knows everything that goes on in the classroom.	1	2	3	4	5
14	If we have something to say, this teacher will listen.	1	2	3	4	5
15	This teacher lets us boss her/him around.	1	2	3	4	5
16	This teacher is impatient.	1	2	3	4	5
17	This teacher is a good leader.	1	2	3	4	5
18	This teacher realises when we don't understand.	1	2	3	4	5
19	This teacher is not sure what to do when we fool around.	1	2	3	4	5
20	It is easy to pick a fight with this teacher.	1	2	3	4	5

		Almost Never	Seldom	Some times	Often	Almost Always
21	This teacher acts confidently.	1	2	3	4	5
22	This teacher is patient.	1	2	3	4	5
23	It's easy to make this teacher appear unsure.	1	2	3	4	5
24	This teacher makes mocking remarks.	1	2	3	4	5
25	This teacher helps us with our work.	1	2	3	4	5
26	We can decide some things in this teacher's class.	1	2	3	4	5
27	This teacher thinks that we cheat.	1	2	3	4	5
28	This teacher is strict.	1	2	3	4	5
29	This teacher is friendly.	1	2	3	4	5
30	We can influence this teacher.	1	2	3	4	5
31	This teacher thinks that we don't know anything.	1	2	3	4	5
32	We have to be silent in this teacher's class.	1	2	3	4	5
33	This teacher is someone we can depend on.	1	2	3	4	5
34	This teacher lets us decide when we will do the work in class	1	2	3	4	5
35	This teacher puts us down.	1	2	3	4	5
36	This teacher's tests are hard.	1	2	3	4	5
37	This teacher has a sense of humour	1	2	3	4	5
38	This teacher lets us get away with a lot in class.	1	2	3	4	5
39	This teacher thinks that we can't do things well.	1	2	3	4	5
40	This teacher's standards are very high.	1	2	3	4	5
41	This teacher can take a joke.	1	2	3	4	5
42	This teacher gives us a lot of free time in class.	1	2	3	4	5
43	This teacher seems dissatisfied.	1	2	3	4	5

		Almost Never	Seldom	Some times	Often	Almost Always
44	This teacher is severe when marking papers.	1	2	3	4	5
45	This teacher's class is pleasant.	1	2	3	4	5
46	This teacher is lenient	1	2	3	4	5
47	This teacher is suspicious.	1	2	3	4	5
48	We are afraid of this teacher,	1	2	3	4	5

Almost Never	Seldom	Some times	Often	Almost Always

QUESTIONNAIRE ON TEACHER INTERACTION (QTI) – TEACHER VERSION

		Almost Never	Seldom	Some times	Often	Almost Always
1	I talk enthusiastically about my subject.	1	2	3	4	5
2	I trust the students.	1	2	3	4	5
3	I seem uncertain.	1	2	3	4	5
4	I get angry unexpectedly.	1	2	3	4	5
5	I explain things clearly.	1	2	3	4	5
6	If students don't agree with me, they can talk about it.	1	2	3	4	5
7	I am hesitant.	1	2	3	4	5
8	I get angry quickly.	1	2	3	4	5
9	I hold the students' attention.	1	2	3	4	5
10	I am willing to explain things again.	1	2	3	4	5
11	I act as if I do not know what to do.	1	2	3	4	5
12	I am too quick to correct students when they break a rule.	1	2	3	4	5
13	I know everything that goes on in the classroom.	1	2	3	4	5
14	If students have something to say, I will listen.	1	2	3	4	5
15	I let the students take charge.	1	2	3	4	5
16	I am impatient.	1	2	3	4	5
17	I am a good leader.	1	2	3	4	5
18	I realise when students don't understand.	1	2	3	4	5
19	I am not sure what to do when students fool around.	1	2	3	4	5
20	It is easy for students to have an argument with me.	1	2	3	4	5
21	I act confidently.	1	2	3	4	5
22	I am patient.	1	2	3	4	5

|		Almost Never	Seldom	Some times	Often	Almost Always
23	It's easy to make me appear unsure.	1	2	3	4	5
24	I make mocking remarks.	1	2	3	4	5
25	I help students with their work.	1	2	3	4	5
26	Students can decide some things in my class.	1	2	3	4	5
27	I think that students cheat.	1	2	3	4	5
28	I am strict.	1	2	3	4	5
29	I an. friendly.	1	2	3	4	5
30	Students can influence me.	1	2	3	4	5
31	I think that students don't know anything.	1	2	3	4	5
32	Students have to be silent in my class.	1	2	3	4	5
33	I am someone students can depend on.	1	2	3	4	5
34	I let students decide when they will do the work in class.	1	2	3	4	5
35	I put students down.	1	2	3	4	5
36	My tests are hard.	1	2	3	4	5
37	I have a sense of humour	1	2	3	4	5
38	I let students get away with a lot in class.	1	2	3	4	5
39	I think that students can't do things well.	1	2	3	4	5
40	My standards are very high.	1	2	3	4	5
41	I can take a joke.	1	2	3	4	5
42	I give students a lot of free time in class.	1	2	3	4	5
43	I seem dissatisfied.	1	2	3	4	5
44	I am severe when marking papers.	1	2	3	4	5
45	My class is pleasant.	1	2	3	4	5
46	I am lenient.	1	2	3	4	5
47	I am suspicious.	1	2	3	4	5
48	Students are afraid of me.	1	2	3	4	5

APPENDIX D

STUDENTS' ADAPTIVE LEARNING ENGAGEMENT IN BUSINESS (SALEB)

Learning Goal Orientation		Almost Never	Seldom	Some times	Often	Almost Always
In this Business class...						
1.	One of my goals is to learn as much as I can.	1	2	3	4	5
2.	One of my goals is to learn new business contents.	1	2	3	4	5
3.	One of my goals is to master new business skills.	1	2	3	4	5
4.	It is important that I understand my work.	1	2	3	4	5
5.	It is important for me to learn the business content that is taught.	1	2	3	4	5
6.	It is important to me that I improve my business skills.	1	2	3	4	5
7.	It is important that I understand what is being taught to me.	1	2	3	4	5
8.	Understanding business ideas is important to me.	1	2	3	4	5
Task Value		Almost Never	Seldom	Some-times	Often	Almost Always
In this business class ...						
9.	What I learn can be used in my daily life.	1	2	3	4	5
10.	What 1 learn is interesting.	1	2	3	4	5
11.	What I learn is useful for me to know.	1	2	3	4	5
12.	What I learn is helpful to me.	1	2	3	4	5
13.	What I learn is relevant to me.	1	2	3	4	5
14.	What I learn is of practical value.	1	2	3	4	5
15.	What 1 learn satisfies my curiosity.	1	2	3	4	5
16.	What I learn encourages me to think.	1	2	3	4	5

Self-Efficiency		Almost Never	Seldom	Some times	Often	Almost Always
In this business class...						
17.	I can master the skills that are taught.	1	2	3	4	5
18.	1 can figure out how to do difficult work.	1	2	3	4	5
19.	Even if the business work is hard, I can learn it.	1	2	3	4	5
20.	I can complete difficult work if I try	1	2	3	4	5
21.	I will receive good grades.	1	2	3	4	5
22.	I can learn the work we do.	1	2	3	4	5
23.	I can understand the contents taught.	1	2	3	4	5
24.	I am good at this subject.	1	2	3	4	5
Self-Regulation		Almost Never	Seldom	Some times	Often	Almost Always
In this business class...						
25.	Even when tasks are uninteresting. I keep working.	1	2	3	4	5
26.	I work hard even if I do not like what I am doing.	1	2	3	4	5
27.	I continue working even if there are better things to do.	1	2	3	4	5
28.	1 concentrate so that 1 won't miss important points.	1	2	3	4	5
29.	1 finish my work and assignments on time.	1	2	3	4	5
30.	I don't give up even when the work is difficult.	1	2	3	4	5
31.	I concentrate in class.	1	2	3	4	5
32.	I keep working until 1 finish what I am supposed to do.	1	2	3	4	5

APPENDIX E

ETHICS APPROVAL FROM CURTIN UNIVERSITY

Curtin University
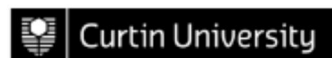
Memorandum

To	Feras Al Dweekat, SMEC	Office of Research and Development
From	Mun Yin Cheong, Form C Ethics Co-ordinator	Human Research Ethics Committee
	Faculty of Science and Engineering	
Subject	Protocol Approval SMEC-06-14	Telephone 9266 2784
Date	5 March 2014	Facsimile 9266 3793
Copy	Jill Aldridge, SMEC	Email hrec@curtin.edu.au

Thank you for your "Form C Application for Approval of Research with Low Risk (Ethical Requirements)" for the project titled *"Investigating outcome focused education in a technology-rich learning environment in Business Courses in the UAE: Learning Environment and Engagement"*. On behalf of the Human Research Ethics Committee, I am authorised to inform you that the project is approved.

Approval of this project is for a period of 4 years 4th March 2014 to 3rd March 2018.

Your approval has the following conditions:

    (i) Annual progress reports on the project must be submitted to the Ethics Office.

    (ii) It is your responsibility, as the researcher, to meet the conditions outlined above and to retain the necessary records demonstrating that these have been completed.

The approval number for your project is SMEC-06-14. Please quote this number in any future correspondence. If at any time during the approval term changes/amendments occur, or if a serious or unexpected adverse event occurs, please advise me immediately.

Regards,

Mun Yin

MUN YIN CHEONG
Form C Ethics Co-ordinator
Faculty of Science and Engineering

Please Note: The following standard statement must be included in the information sheet to participants:
This study has been approved under Curtin University's process for lower-risk Studies (Approval Number xxxx). This process complies with the National Statement on Ethical Conduct in Human Research (Chapter 5.1.7 and Chapters 5.1.18-5.1.21). For further information on this study contact the researchers named above or the Curtin University Human Research Ethics Committee. c/- Office of Research and Development, Curtin University, GPO Box U1987, Perth 6845 or by telephoning 9266 9223 or by emailing hrec@curtin.edu.au.

STUDENTS' INFORMATION SHEET AND CONSENT FORM

Curtin University
School of Education

Curtin University

Participant Information Sheet - Students

> **Investigating outcome focused education in a technology-rich learning environment in Business Courses in the UAE: Learning Environment and Engagement**

My name is Feras Al Dweekat. I would like your help with some research that I am doing through Curtin University, Australia about how Business students learn.

Purpose of the Research

I am investigating how to assess students in terms of their Perceptions of the learning environment, Perceptions of teacher interpersonal behaviour and Self-reports of motivation and self-regulation. I am also investigating how improving your classroom environment with technology might also improve how much you enjoy learning and how well you learn.

Your Role

Your role is complete three short online surveys which your teacher will ask your class to complete during class time. Your teacher will give you help to answer the questions if you need it. The surveys will ask you questions about your classroom environment, for example, you are treated the same as other students in this class and whether you would like this to happen more often. Answers from the surveys will be grouped together and given to your teacher so that your teacher can work with your class to try and make improvements to your classroom environment. Your teacher will not be able to see your own answers to the questions. He or she will only be able to see a class average. Your own answers will be completely private. The benefit of being a part of this research is that you are able to give feedback to your teacher and work together with them to improve your classroom. But if you feel uncomfortable at any time, your teacher will allow you to stop and you will not be in any trouble.

Permission

You do not have to take part of the research if you don't want to or you can ask to stop at any time. If you agree to take part, please sign the form attached.

Privacy

No student will be identified in the study or in the reporting of the study. You do not have to write your name on any of the surveys. Instead, you will be given a number and neither the teacher nor I will be able to tell what your responses were. The purpose of this study is not to judge you or your teacher, but to investigate whether improving your classroom environment helps your learning.

Thank you very much for your help with this important research.

Curtin University

Participant Consent Form -Students

Investigating outcome focused education in a technology-rich learning environment in Business Courses in the UAE: Learning Environment and Engagement

- I understand the reason for this research.

- I have been given a chance to ask questions about the research.

- I understand that to take part in this study, my teacher will ask me to fill in 3 short online surveys about my classroom environment.

- I understand that I can withdraw from this research at any time without anyone being upset with me.

- All my answers will be kept private.

I agree to take part in the research about my classroom environment.

Name: _____

Signature: _____

Date: _____

TEACHERS' INFORMATION SHEET AND CONSENT FORM

Curtin University
School of Education

Curtin University

Participant Information Sheet - Teacher

Investigating outcome focused education in a technology-rich learning environment in Business Courses in the UAE: Learning Environment and Engagement

My name is Feras Al Dweekat. I would like your help with some research that I am doing through Curtin University, Australia about how Business students learn.

Purpose of the Research
I am investigating how to assess students in terms of their Perceptions of the learning environment, Perceptions of teacher interpersonal behaviour and Self-reports of motivation and self-regulation. I am also investigating how improving your classroom environment with technology might also improve how much you enjoy learning and how well you learn.

Your Role
Your role is complete a short online survey which you will complete during college time. The surveys will ask you questions about your interpersonal behaviour, for example, you speak enthusiastically about your subject and whether you act confidently in your teaching. Your answers will be completely private. The benefit of being a part of this research is that you are able to give feedback to your students and work together with them to improve your classroom. But if you feel uncomfortable at any time, you can stop and you will not be in any trouble.

Permission
You do not have to take part of the research if you don't want to or you can ask to stop at any time. If you agree to take part, please sign the form attached.

Privacy
No teacher will be identified in the study or in the reporting of the study. You do not have to write your name on any of the surveys. Instead, you will be given a number and I will be able to tell what your responses were. The purpose of this study is to investigate whether improving your classroom environment helps your learning.

Thank you very much for your help with this important research.

Curtin University

Participant Consent Form -Teacher

Investigating outcome focused education in a technology-rich learning environment in Business Courses in the UAE: Learning Environment and Engagement

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- I understand the reason for this research.

- I have been given a chance to ask questions about the research.

- I understand that to take part in this study, I will complete a short online survey about my interpersonal behaviour.

- I understand that I can withdraw from this research at any time without anyone being upset with me.

All my answers will be kept private.

I agree to take part in the research about my classroom environment.

Name: _____

Signature: _____

Date: _____