

School of Accounting, Economics and Finance

**Measurement and Empirical Analysis of Student
Engagement with Experiential Learning Activities**

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**This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University**

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DECLARATION

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

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

The research presented and reported in this thesis was conducted in accordance with the National Health and Medical Research Council National Statement on Ethical Conduct in Human Research (2007) – updated March 2014. The proposed research study received human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number #HRE2019-0106.

Signature: _____


Date: 13/04/2022

ABSTRACT

This thesis fills two significant gaps in the literature: investigating and developing an instrument to measure engagement at an activity level; and investigating the relationship between student engagement with an Experiential Learning Activity (ELA) and the activities' characteristics and the characteristics of the student. With regards to the first gap, the current literature provides established instruments to measure student engagement at an institutional and course level, but not at an individual activity level. With regards to the second gap, since the current literature does not incorporate detailed analysis of student engagement at an activity level, empirical evidence regarding what factors affect student engagement at an activity level is lacking. Measuring student engagement from an activity and investigating determinants of student engagement is important because it will assist instructors make informed, evidence-based decisions to improve their classes.

Two different activity level instruments were developed and pilot tested. The first instrument is the Post-ELA survey, which was designed to measure student engagement for a single activity and should be administered soon after students have completed the activity. As a result of the pilot testing, several scales are recommended, depending on the number of items available to fit within a questionnaire design. Results suggest past literature, that typically uses a single item to measure engagement with an activity, can be improved by using at least 3 items. Discriminant validity between the three types of engagement listed in the literature (affective, behavioural and cognitive engagement) was not found, providing insights into the theory and measurement of engagement at both activity and course levels.

Engagement data was collected from four individual activities in two courses using the Post-ELA survey instrument. The relationships between student engagement and student characteristics were investigated using a forward stepwise regression. The following student characteristics were found to have significant positive relationships with student engagement when included together in a multiple regression equation: if a student is international rather than domestic; how much past experience the student has with Experiential Learning Activities (ELAs); and if the student has accounting work experience. Additionally, there was a significant relationship between engagement and the student's first language. However, this was not included as one of the significant

results of the study because the variation in engagement was better explained by whether the student was international or domestic.

The second instrument is the End-of-semester (EOS) survey, which was designed to measure student engagement from multiple activities for comparison purposes. The literature provides considerable advice concerning what features make an ELA superior, but lacks empirical evidence. This thesis is the first to provide such evidence by comparing engagement from 34 ELAs. Regression and thematic analysis investigated relationships between engagement and ELA characteristics. Strong evidence was found to suggest engagement is higher if an ELA is authentic and detailed. Evidence also suggests engagement is higher when an ELA incorporates critical thinking and is personally relevant. Lastly, the method of facilitation also affects engagement. These results provide practical guidance for designing a good ELA and contributes theoretically to determinants of student engagement.

ATTRIBUTION STATEMENT

The following published paper was informed by Chapter 2 of this thesis:

Experiential learning activities in university accounting education: A systematic literature review. Journal of Accounting Education, 52 (2020).

<https://doi.org/10.1016/j.jaccedu.2020.100680>

	Conception & Design	Acquisition of Data & Method	Data Conditioning & Manipulation	Analysis & Statistical Method	Interpretation & Discussion	Final Approval
Lara Gittings	x	x	x	x	x	X
I acknowledge that these represent my contribution to the above research output. Signed: ██████████						
Professor Ross Taplin	x	x	x	x	x	X
I acknowledge that these represent my contribution to the above research output. Signed: ██████████						
Dr Rosemary Kerr	x	x	x	x	x	x
I acknowledge that these represent my contribution to the above research output. Signed: ██████████						

The following manuscript in preparation was informed by Chapter 4 and Chapter 5 of this thesis:

Measuring Student Engagement at an Activity Level [Manuscript in Preparation].

	Conception & Design	Acquisition of Data & Method	Data Conditioning & Manipulation	Analysis & Statistical Method	Interpretation & Discussion	Final Approval
Lara Gittings	x	x	x	x	x	x
I acknowledge that these represent my contribution to the above research output. Signed: ██████████						
Professor Ross Taplin	x	x	x	x	x	x
I acknowledge that these represent my contribution to the above research output. Signed: ██████████						

The following paper under review was informed by Chapter 6 of this thesis:

Empirical Evidence of Factors to Improve Student Engagement: Comparing 34
 Experiential Learning Activities [Under Review in Accounting Education 2021].

	Conception & Design	Acquisition of Data & Method	Data Conditioning & Manipulation	Analysis & Statistical Method	Interpretation & Discussion	Final Approval
Lara Gittings	x	x	x	x	x	X
I acknowledge that these represent my contribution to the above research output. Signed: [REDACTED]						
Professor Ross Taplin	x	x	x	x	x	X
I acknowledge that these represent my contribution to the above research output. Signed: [REDACTED]						
Dr Andrew Brennan	x	x	x	x	x	x
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LIST OF ABBREVIATIONS

Abbreviation	Explanation
ELT	Experiential Learning Theory
AE	Affective Engagement
BE	Behavioural Engagement
CE	Cognitive Engagement
ELA	Experiential Learning Activity
EOS survey	End-of-semester survey
NHMRC	National Health and Medical Research Council
SLR	Systematic Literature Review
NSSE	National Survey of Student Engagement
BCSSE	Beginning College Survey of Student Engagement
CCSSE	Community College Survey of Student Engagement
CLASSE	Classroom Survey of Student Engagement
SEI	Student Engagement Index
SCEQ	Student Course Engagement Questionnaire
SE	Student Engagement Survey
BERI	Behavioural Engagement Related to Instruction
AVE	Average Variance Extracted
SES	Student Engagement Score
EFA	Exploratory Factor Analysis
CMV	Common Methods Variance
EFL	English as a first language
EAL	English as an additional language
CFA	Confirmatory Factor Analysis
DV	Dependant variable
IV	Independent variable

CHAPTER 1: INTRODUCTION TO THE RESEARCH PROJECT

1.1 CONTEXT AND MOTIVATION OF THE STUDY

Accounting has been taught at a university level since the 1880s and has evolved over its 140-year existence (Langenderfer, 1987; Nelson, 1995). Similar to many disciplines, accounting higher education is transitioning from a very instructor-centred learning environment to a very student-centred learning environment in response to numerous calls to change noted since the 1990s (Coram, 2005; O'Connell et al., 2015).

Universities' overdue responses to these calls for change coincide with changes in the nature of the accounting industry with regards to globalisation and technological innovation (Elen, Clarebout, Léonard, & Lowyck, 2007; O. Khalil, 2015).

The transition to student-centred learning environments was partially aided and informed by Experiential Learning Theory (ELT) which is, therefore, one of two theoretical constructs used for this thesis. ELT can be defined as a constructivist stance towards learning which suggests learners create meaning from experience by following Kolb's learning cycle while still acknowledging that individual students learn in different ways (Hedin, 2010; Kolb, 1984, 2014). Furthermore, although learning can stem from any experience, ELT suggests Experiential Learning Activities (ELAs) can be more effective and valuable for student learning and for commencing the learning cycle in a classroom setting (Kolb, 1984, 2014).

One of the important—but under-researched—benefits of ELAs is student engagement, which is the second theoretical construct used for this thesis. Engagement can be defined as “sustained behavioural involvement in learning activities accompanied by positive emotional tone” (Skinner & Belmont, 1993, p. 572). It is widely accepted in the literature that engagement should be considered as a continuum from full engagement to complete disengagement (Bowden, Tickle, & Naumann, 2021). It is also widely accepted that engagement is a multidimensional construct with three dimensions: Affective Engagement (AE), Behavioural Engagement (BE) and Cognitive Engagement (CE) (Bowden et al., 2021; Fredricks, Blumenfeld, & Paris, 2004; Trowler, 2010). Engagement is a stepping stone to a range of highly desirable outcomes including transferable skills, practical competencies and improved student retention (Bowden et al., 2021; Endo & Harpel, 1982; Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008).

1.2 AIM OF THE STUDY

This study aims to address the following objectives and corresponding research questions in this thesis:

Objective 1 – Develop a survey instrument to measure university accounting students' engagement from one ELA.

Objective 2 – Develop a survey instrument to compare university accounting students' engagement from multiple ELAs.

Objective 3 – Investigate and compare university accounting students' engagement from various ELAs.

RQ 1 – What student characteristics can influence student engagement from ELAs?

RQ 2 – What ELA characteristics can influence student engagement from ELAs?

The objectives and research questions for this study were built around current gaps in the literature, which are important and impactful for university accounting educators. In the current literature, engagement is commonly measured at an institutional level and a course¹ level (Mandernach, 2015), but not for individual activities. Therefore, the first two objectives for this study aim to develop activity level instruments designed to measure student engagement for two different purposes. Objective 1 aims to develop an instrument which measures student engagement in-depth for one activity at a time. This instrument will be designed to be administered soon after completing the activity to ensure students remember the activity in greater detail. Therefore, the student engagement survey instrument developed to address Objective 1 will be referred to as the Post-ELA survey.

Objective 2 aims to develop a student survey instrument, which facilitates direct comparison of student engagement between activities by measuring student engagement from multiple activities within the one instrument. Therefore, this instrument is designed to be administered at the end of a series of activities have been completed by students. This can be at the end of a class for all the activities conducted in the class or after a series of classes if the relevant activities were completed over

¹ Course is equivalent to Unit in Australian terminology (A unit of learning typically running one academic semester). Course has been used instead of unit to be consistent with the majority of the current literature, which uses American terminology.

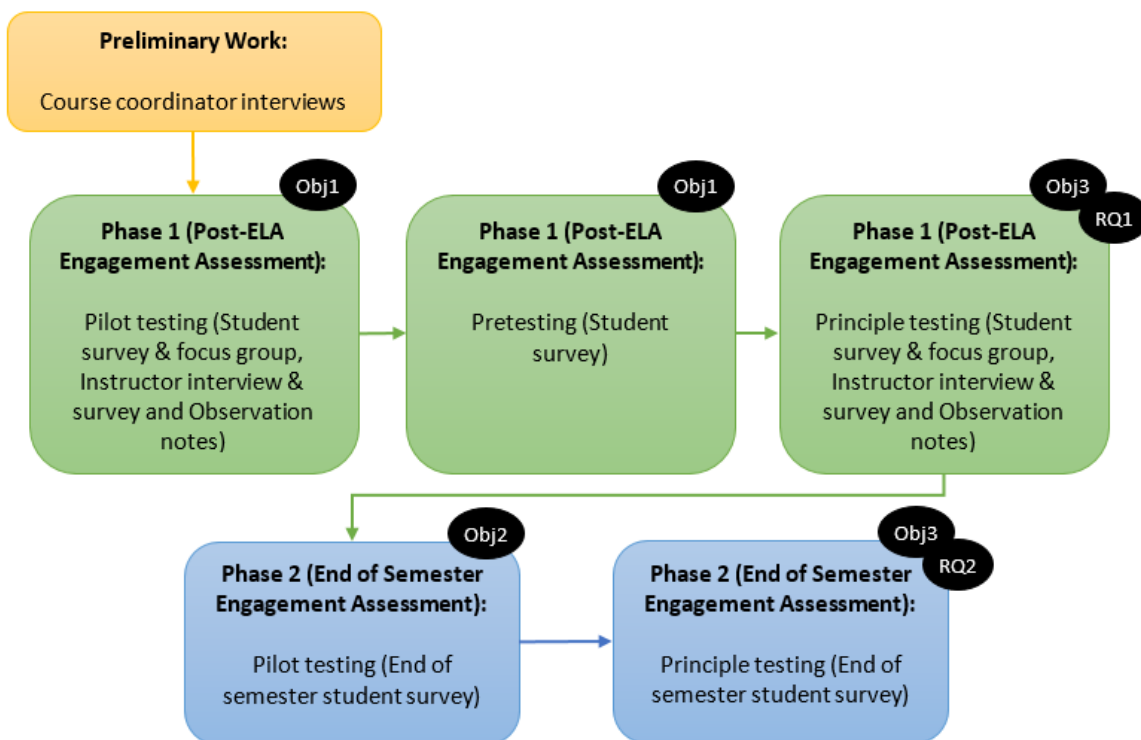
more than one class. Since this instrument was used for activities over a series of classes in this thesis, the survey instrument developed for Objective 2 will be referred to as the End-of-semester (EOS) survey.

The third and final objective aims to investigate determinants of student engagement with ELAs. The determinants investigated in this thesis will fall under one of two categories: ELA characteristics and student characteristics. Therefore, objective 3 is broken down into two research questions investigating student characteristics and ELA characteristics, respectively, as determinants for student engagement with ELAs.

1.3 OVERALL RESEARCH DESIGN

The flowchart in Figure 1.1 provides a visual depiction of the overall research design for this project, which encompasses three parts. First, preliminary research was completed to establish the context of the research project. The preliminary work was followed by the two primary phases of this research project: Phase 1 - Assessing student engagement from a single ELA; and Phase 2 - Comparing student engagement from multiple ELAs. These three parts are further detailed in the subsections below:

Figure 1.1 Research Design Flow Chart



1.3.2 PRELIMINARY WORK

The purpose of this preliminary work was to establish the context and environment of the research project. More specifically, the aim was to establish the extent to which ELAs in general and specific types of ELAs are used in courses completed by accounting students at Curtin University. This also provided the researcher with information, which could be used for future decisions such as which courses to approach for testing in Phase 1 and Phase 2.

In order to satisfy the above aim, interviews with course coordinators were conducted, and course outlines were inspected when interviews were not possible. The course coordinators of all courses comprising the accounting degree at Curtin were invited to participate in an interview via email. Of the 17 courses, the coordinators of six courses agreed to be interviewed. Therefore, the results described below are largely based on the course outline information.

According to the interviews and course outlines, ten out of 17 courses employed at least one ELA as an in-class activity, while the remaining seven are inconclusive as information regarding in-class activities was not available. Five of the courses employed ELAs extensively, with an ELA included in almost every class. The types of ELAs identified can be categorized into four types of ELAs; case study, live case, video case and role play. The most common ELA type was case studies followed by live cases. Therefore, a decision was made to specifically include case studies and live cases in Phase 1 and Phase 2, which was taken into consideration when assessing courses' suitability for subsequent inclusion in the research project.

1.3.3 PHASE 1 – ASSESSING STUDENT ENGAGEMENT AT AN ELA LEVEL

The purpose of Phase 1 is to develop the Post-ELA engagement instrument and use this instrument to assess university student engagement at an activity level in depth. Furthermore, the engagement data collected will also be used for the purpose of investigating factors affecting student engagement from ELAs. Student engagement will be measured from the student, instructor and observer perspective. More specifically a student survey, instructor interview, instructor survey, observation notes and student focus groups will be used to collect student engagement data. The student survey will be developed for the purpose of this study, and the other instruments will be

constructed to be consistent with the student survey. For further information regarding these instruments, refer to Chapter 4 where they will be discussed in detail.

As the instruments have to be developed before being used to answer Research Question 1, three rounds of data collection were included in Phase 1: pilot testing, pre-testing and primary testing. The pilot testing will be an initial trial run of the data collection process as a whole, which assesses student engagement from one activity in one course using all the above mentioned instruments. The pretesting will use feedback from a handful of randomly selected students to fine-tune the student survey only after changes resulting from the pilot testing. Finally, the primary testing will include all instruments and will be administered in two courses for two activities in each course. The results from this primary testing will be used for subsequent analyses and discussion for Phase 1. For further information regarding these rounds of data collection, refer to Chapter 4 and 5 where they will be discussed in detail.

1.3.4 PHASE 2 – COMPARING STUDENT ENGAGEMENT FROM MULTIPLE ELAS

The purpose of Phase 2 is to develop and use the EOS survey instrument to more directly assess student engagement between ELAs. This data will be used to test what ELA characteristics affect student engagement more rigorously. The data will be collected using only the EOS survey, which will ask students about multiple ELAs in the one instrument. For further information regarding the end of semester survey instrument, refer to Chapter 6 where it will be discussed in detail.

As the EOS survey is developed as part of this study, Phase 2 will include two rounds of data collection: pilot testing and primary testing. The pilot testing was a trial run of the data collection process, which consisted of the EOS survey being administered in two courses with four and five activities, respectively. The pilot test results were used to refine the instrument and the process used to collect end of semester data. The primary testing will also use the EOS survey instrument, but it will be administered in seven courses with a total of 34 activities. The results yielded by this primary testing will be used for subsequent analyses and discussion for Phase 2. For further information regarding these rounds of data collection, refer to Chapter 6 where they will be discussed in detail.

1.3.5 ETHICS APPROVAL

All the above instruments and testing was approved by Curtin's Human Research Ethics Committee. The research project's approval number is HRE2019-0106. This approval means this research project adheres to the National Health and Medical Research Council's (NHMRC's) processes for studies involving human participants. Please see Table 1.1 Appendix 1: for one of the participant information sheets used in this thesis, which was prepared in compliance with the NHMRC.

1.4 SIGNIFICANCE AND CONTRIBUTIONS OF THE RESEARCH PROJECT

The significance of this research project relies on the context of engagement and ELAs being important individually and in conjunction with one another. The literature (see Chapter 2) shows ELAs can be used to achieve many learning outcomes desirable in accounting education, such as critical thinking and communication skills (Kolb, 1984, 2014). In order to experience these desirable outcomes, students must first engage with the ELA. However, the current generation of university students (Gen Z) are harder to engage in the classroom as they are known to have shorter attention spans, be more distrustful and have more of a desire for instant satisfaction (Rue, 2018; Weber & Keim, 2021). Therefore, it is more important than ever to monitor and constantly work towards improving university students' engagement in the classroom. This is particularly important for ELAs, which are so important in learning the skills required for an accounting career, but require students to engage in order to reap the benefits of the ELA.

This thesis will make both theoretical and practical contributions regarding student engagement and ELAs. On a theoretical level, this study will add to the understanding of student engagement as a concept, particularly with regards to its application to an activity level. Furthermore, on both the theoretical and practical level, this study will provide instructors with instruments to measure student engagement at an activity level. Lastly, this study will contribute theoretically and practically by providing evidence regarding what student characteristics and ELA characteristics impact student engagement.

1.5 CHAPTER OUTLINE

Chapters two and three make up the foundational material of this thesis. Chapter two provides an in depth review of the literature regarding ELT and ELAs in accounting higher education as well as student engagement. Chapter three identifies and justifies the hypotheses associated with the above stated research questions.

Chapters four, five and six form the main body of the thesis as they include the methods, results and discussion for Phase 1 and Phase 2 of the research project. Chapter four details the instrument development and pilot testing for the instruments used in Phase 1. The final round of data collection for Phase 1 is detailed in Chapter 5, including the relevant methods, results and discussion. Chapter six details the whole of Phase 2, including the instrument development, pilot testing and the final round of data collection methods, results and discussion.

Chapter 7 is the final chapter in the thesis and serves as a concluding chapter. Information for the research project as a whole is presented, including both Phase 1 and Phase 2. It provides a summary of the research findings, explores the implications of these findings, suggests possible avenues to explore in future research arising from limitations of this research project and delivers concluding remarks.

CHAPTER 2: LITERATURE REVIEW

2.1 OVERVIEW

This chapter provides an overview of the literature relevant to the research completed in this thesis. Firstly the accounting higher education landscape is described followed by an explanation of Experiential Learning Theory (ELT) and Experiential Learning Activities (ELAs). Then a Systematic Literature Review (SLR) regarding benefits of ELAs is presented. One of the benefits identified in the SLR was student engagement, which will be a focus of this thesis. Therefore, the theoretical construct, measurement and importance of student engagement are also detailed in this chapter.

2.2 ACCOUNTING HIGHER EDUCATION LANDSCAPE

Institutions facilitating formal higher education have been in existence for hundreds of years (Keyes, 1988). Accounting, in particular, has been taught at a university level since the 1880s (Langenderfer, 1987). As would be expected, the landscape of higher education, including accounting higher education, has evolved over the 100 plus years of its existence (Langenderfer, 1987; Nelson, 1995). The following paragraphs explore where accounting higher education has come from, where it is now and what it plans to be in the future.

Similarly to most disciplines, accounting higher education historically fostered instructor-centred learning environments (Coram, 2005; Elen et al., 2007; O'Connell et al., 2015). These instructor-centred environments can be recognized by the use of traditional learning activities (TLAs) such as lectures and supplying answers to generic textbook homework questions. TLAs are characterized by the student being a passive observer in the learning experience (Coram, 2005; Elen et al., 2007; O'Connell et al., 2015).

Ardent calls for change in accounting higher education have been prominently noted since the 1980s in Australia (O'Connell et al., 2015). However, calls for change were actually being made long before then. Even at its conception, accounting practitioners were disappointed with the narrow and technical focus of these programs. Accounting practitioners are the ones who advocated and often provided the funds for accounting to be taught at universities, yet the curriculum was not one they agreed with (Nelson,

1995). The practitioners then and now believe technical procedures are best learnt in depth on the job whilst university education should aim to equip students with the transferable skills they need to succeed in the profession (Nelson, 1995). These calls for change from the practitioners who founded accounting higher education went unanswered at the time, but universities are now listening and responding to the industry calls for change (O'Connell et al., 2015).

Universities' long overdue response to calls for change coincide with drastic changes in the nature of the accounting industry (Elen et al., 2007; O. Khalil, 2015; O'Connell et al., 2015). Since the 1990s, globalisation and technical innovation has increased exponentially (O'Connell et al., 2015). Globalisation can be briefly defined as "the extension of social relations over the globe" (Poullaos, 2004, p. 2). In accounting, this has resulted in the large accounting firms changing their focus from auditing to a wide range of services including more consulting oriented roles with fewer national boundaries (Perera, Rahman, & Cahan, 2003). This has resulted in the need for graduates who possess skills such as "flexibility, cultural sensitivity, integrity, and a global mindset" (Zeshan, 2013, p. 6). Technical innovations are referring to the fact technology is used more and more in accounting practice (Monteiro Lopes & Oliveira, 2022; O'Connell et al., 2015). A lot of the time-consuming monotonous work graduate accountants used to do is now done by computers. The role of accountants has changed from number crunchers to advisors and interpreters of financial and non-financial information (Monteiro Lopes & Oliveira, 2022; O'Connell et al., 2015). This has resulted in the need for graduates who not only possess better IT skills, but also possess broad transferable skills such as communication skills and flexibility (O'Connell et al., 2015). Therefore, prospective accounting professionals now require transferable skills more than ever before in order to survive and thrive in the industry (O. Khalil, 2015; Monteiro Lopes & Oliveira, 2022; O'Connell et al., 2015). It is now essential for students to possess these transferable skills to meet industry needs.

The professional accounting bodies have worked with industry professionals to promote change in accounting education at university (O. Khalil, 2015; O'Connell et al., 2015). This was a significant step in the movement for change because historically professional accounting bodies were inadvertently one of the factors preventing change in accounting higher education due to accreditation requirements. During the early calls for change, universities had to design their curriculum to equip students with the

knowledge base to be capable of passing professional body qualifying exams. The universities were left with little choice but to teach this technical knowledge at the expense of the broader skills the industry wanted (Nelson, 1995). Now the professional bodies actively encourage change by emphasizing transferable skills in the accreditation processes and requirements (O. Khalil, 2015; O'Connell et al., 2015).

Australian universities have started responding to the calls for change by trying to change the pedagogical approach (O'Connell et al., 2015). Universities now introduce more student-centred learning activities to accompany traditional learning activities (TLAs) in the accounting curriculum (O'Connell et al., 2015; Sulaiman, Shahimi, & Zakaria, 2021). These student-centred activities aim to equip students with transferable skills such as critical thinking, communication, teamwork, conflict resolution and professional values/ethics (O. Khalil, 2015; O'Connell et al., 2015).

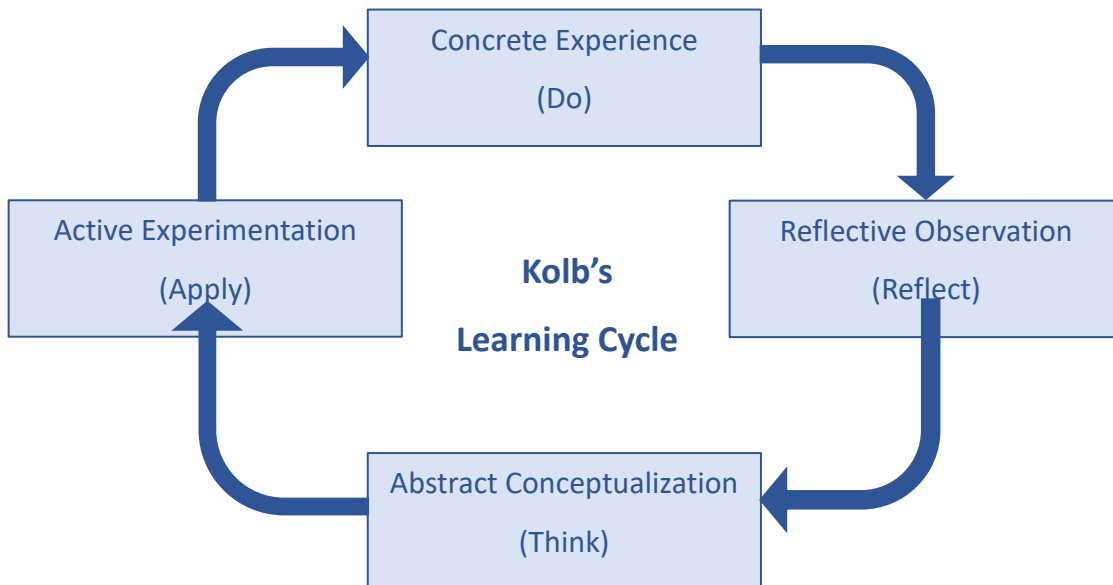
The future for this necessary change in accounting higher education appears challenging, but hopeful. Even after the 1980s calls for change, there has been resistance to evolving to a more student-centred pedagogy (O'Connell et al., 2015). This fact depicts the slow pace of change inherently characteristic of the higher education industry in general (O'Connell et al., 2015). Especially for modern universities, change can be difficult to implement. As previously mentioned, although professional bodies are trying to promote change, their accreditation processes also limit universities' ability to experiment and innovate with their curriculum (Nelson, 1995; O'Connell et al., 2015; Zammuto, 2008). Furthermore, change is also expensive for universities. It requires money to research new learning techniques as well as introduce them to staff and students (Nelson, 1995). On the other hand, most universities and their academic staff have now acknowledged and agreed the evolution of the industry means accounting students' educational needs in order to become work ready have now changed (O'Connell et al., 2015). Although instructor-centred learning is still the most utilised in university accounting classes, student-centred learning has begun to be incorporated more often in the accounting curriculum in Australia (Blankley, Kerr, & Wiggins, 2017). This is a big step on the way to achieving the significant change needed in accounting higher education and is a promising sign for the future.

2.3 ELT AND ELAS

Experiential Learning Theory (ELT) was one of the key factors in driving a student-centred learning approach in higher education and is, therefore, the first theoretical construct for this thesis. ELT can be defined as a constructivist stance towards learning which suggests learners create meaning from experience by following Kolb's learning cycle while still acknowledging that individual students learn in different ways (Hedin, 2010; Kolb, 1984, 2014). There are two key features of this definition, which should be highlighted to clearly understand the meaning of ELT. The first key feature is the term 'constructivist' combined with the phrase 'create meaning from experience'. This key feature shows ELT is about getting students actively involved in a learning process rather than using passive teaching techniques (Kolb, 1984, 2014).

The second key feature is the learning cycle. The four steps which make up Kolb's learning cycle are: Concrete Experience; Reflective Observation; Abstract Conceptualization; and Active Experimentation (Kolb, 1984, 2014). Please refer to Figure 2.1 for a visual depiction of Kolb's learning cycle, which shows the four individual steps are chain linked. Concrete Experience is the act of participating in a learning task. Reflective Observation requires students to look back on the task and assess their execution of the Concrete Experience. Abstract Conceptualization states students must make guidelines or generalized rules for themselves based on their reflection. Active Experimentation requires students to apply their generalized rules and adjust them through trial and error when similar tasks are encountered in the future. Therefore, the Active Experimentation step facilitates a cycle effect where the four steps are repeated when comparable tasks are encountered (Kolb, 1984, 2014). The steps in the learning cycle have been aptly simplified and explained by M. Butler, K. Church, and A. Spencer (2019) as 'Do, Reflect, Think and Apply'.

Figure 2.1 Kolb's Learning Cycle



Although ELT draws on the works of many reputable authors, the underlying assumptions are predominantly based on the works of Dewey, Piaget and Lewin (Kolb, 1984, 2014). Dewey established the foundation for the ideas of evolution and pragmatism within an educational context (Hickcox, 1991). The relevance of evolution is the idea that “knowledge lies in the organism’s increased capacity to adapt to new situations to solve problems through constantly revising the expectations” (Bailey & Pring, 2014, p. 33). This captures the essence of the learning cycle which encourages students to constantly adapt and improve themselves. Pragmatism is “a philosophical movement that includes those who claim that an ideology or proposition is true if it works satisfactorily” (McDermid, 2021, p. 1). This idea of pragmatism is suggesting ELT can only be satisfactory if it can successfully inform improvement in education.

Piaget contributed to ELT through his cognitive development theory, which states a learning process is “a cycle of interaction between the individual and the environment” (Hickcox, 1991, p. 58). The steps in Kolb’s learning cycle facilitate an interaction between the student and the concrete experience, which represents the environment.

Lewin’s contribution to ELT lies in his famous behaviour equation and his work on T-groups (Coghlan & Jacobs, 2005). Lewin’s equation states “behaviour is the function of the person and the environment” (Coghlan & Jacobs, 2005). This equation correlates with the ideas highlighted in Piaget’s work above. A ‘T-Group’ is defined as “a learning laboratory in which group members explore and learn leadership and group

membership skills by participating freely with one another, sharing ‘here and now’ experiences and reactions and giving/receiving feedback to/from each other” (Robin, 2016, p. 1). Although in a slightly different context, this definition emphasizes the importance of timely reflection. Kolb’s learning cycle incorporates this idea that timely reflection is important through the cycle step Reflective Observation (Hickcox, 1991).

Kolb’s learning cycle can start with any experience in various situations, but when focusing on face-to-face classroom experiences, ELT suggests ELAs can be more effective and valuable for student learning and for commencing the learning cycle (Kolb, 1984, 2014). Therefore, in order to provide the best foundation for students to commence the learning cycle, this thesis focuses on ELAs rather than the entire learning cycle. For the purpose of this thesis, an ELA can be defined as any learning activity which is student-centred and actively involves the student in a learning process, which provides a concrete experience for students to link theory with practice. Some examples of in-class ELAs include case studies, live cases, role plays, labs/pracs, computer simulations and physical simulations. However, as mentioned in Chapter 1, this thesis will focus on variations of case studies and live cases.

2.4 SLR – BENEFITS OF ELAS IN UNIVERSITY ACCOUNTING CLASSES

Although ELT research suggests the use of ELAs (M. Butler et al., 2019; Kolb, 1984, 2014), there appears to be no comprehensive review of research on the use of ELAs in accounting education at universities. There have been reviews on ELT in higher education (Hickcox, 1991; McCarthy, 2016; Morris, 2020). However, these reviews are focused on the theory, not on learning activities using the theory. Therefore, a Systematic Literature Review (SLR) was completed to interpret the body of research published about identifiable ELAs. More specifically, the SLR in this thesis aims to explore the following review questions regarding published research on ELAs for undergraduate accounting university students:

1. What types of ELAs are researched?
2. What benefits of ELAs are researched?
3. How compelling is the evidence for these benefits?

This third review question is important in the context of practice being based not only on opinions or theory but also on sound scientific evidence (Rebele & St. Pierre, 2015).

Furthermore, this SLR identifies valuable gaps in the literature on this topic, which the subsequent research in this thesis will aim to address.

The remainder of this section details the methods, descriptive statistics, thematic analysis results, other relevant results as well as discussions and recommendations for future research, in that order. Each of these components include multiple elements which are discussed over multiple sections. For example, the SLR methods are detailed in sections 2.4.1 to 2.4.4, which covers Database selection, Search string development, Inclusion/exclusion criteria and Additional search for relevant articles, respectively.

The major results from this SLR have been published under the title “ELAs in university accounting education: A systematic literature review” (Gittings, Taplin, & Kerr, 2020) and was modified for inclusion in this thesis.

2.4.1 SLR METHODS - DATABASE SELECTION

The review was conducted in databases instead of individual journals in an attempt to capture as many relevant results as practically possible. During the planning, it was noted, while certain journals do specialise in accounting education, articles about accounting education could be published in other journals. Therefore, the search was not limited to specialized accounting education journals. However, it was a priority to make sure all prevalent accounting education journals were captured in the chosen database combination.

The database selection involved three steps. First, prevalent academic journals in the accounting education field were identified through the latest periodic Accounting Education Literature Review by Apostolou, Dorminey, Hassell, and Hickey (2019). The following journals were identified in this article: *Journal of Accounting Education*, *Accounting Education*, *Advances in Accounting Education*, *Global Perspectives on Accounting Education*, *Issues in Accounting Education* and *Accounting Educators' Journal*. Second, these journals were searched in Ulrichsweb to determine which databases included each journal. For example, *Journal of Accounting Education* was found in the following databases: EBSCOhost; Elsevier BV; Emerald Publishing Limited; Gale; OCLC; ProQuest; and Taylor & Francis. Lastly, a combination of databases was found, which would adequately encompass the identified accounting

education journals. The reputation and functionality features of the databases also factored into the decision. The final combination of databases selected for this SLR were Emerald, OCLC, Proquest and Scopus.

2.4.2 SLR METHODS - SEARCH STRING DEVELOPMENT

The search string used for this review was derived from the above review question 2 regarding what benefits of ELAs are researched in accounting education. Key words were extracted from this research question, and adapted to a search string with various alternative terms for each key word or phrase. Table 2.1 depicts the final search string with one key word or phrase from the research question presented in each column, and all its alternative terms in the rows below. Using Boolean search protocols, the columns were separated by 'AND' while the alternative terms for each column were separated by 'OR' during the search. Boolean search protocols also used asterisks to truncate a word so alternative word endings were included. For example, including constructivis* as a search term included both constructivist and constructivism. Lastly, quotation marks indicate a specific combination of words is required rather than a selection of words in any order. The final search string was developed over multiple searches. The outputs of preliminary searches were used to fine-tune and add alternative terms to the search string to get the most comprehensive and accurate list of articles for the review. For example, 'business' was included as an alternative to 'accounting' because too many relevant articles were not captured without the search term 'business', despite the fact it also captured many articles not relevant to this review.

Table 2.1 Search string including alternative terms

Key Word 1	Key Word 2	Key Word 3	Key Word 4	Key Word 5
accounting	university student*	experiential learning	learning activity	benefit
Key Word 1 Alternatives	Key Word 2 Alternatives	Key Word 3 Alternatives	Key Word 4 Alternatives	Key Word 5 Alternatives
business	education	Kolb*	"case study"	better
	tertiary	"active learning"	"live case"	assessment
	"higher education"	"student-centred learning"	"living case"	feedback
		"problem-based learning"	"work placement"	engagement
		"cooperative learning"	"industry speaker"	motivat*
		"learning by doing"	"role play"	evaluat*
		constructivis*	intern*	improve*
		"learn by doing"	practicum	value
	simulation			

2.4.3 SLR METHODS - INCLUSION/EXCLUSION CRITERIA

Articles were only included in the final thematic analysis if they met all the following inclusion criteria:

The article must be about an accounting subject (and thus excludes other business majors² and general business where accounting students are not specified)

The article must be about undergraduate university students (not high school and not postgraduate education)³

The article must include a valid theoretical construct

The article must assess the efficacy of specific ELA(s)

The article must be in English or have an English version available

The article must be a published academic journal article (not a book or media article)

The article must be published in 2018 or earlier⁴

² For the purpose of this article other business majors included tax, information systems, management, HR, marketing, entrepreneurship, finance, business law and economics.

³ In cases where an article investigates postgraduate and undergraduate students, the article was only included if the undergraduate student results can be examined in isolation (such as having separate columns for postgraduate and undergraduate students in the results table).

⁴ Although this thesis was completed and submitted in February 2022, this SLR was a very early step in the thesis used to guide the scope of the research project and was, therefore, completed at the end of 2018. As such, the exclusion of articles published after 2018 is a necessary consequence of the timing of this step in the context of the thesis.

2.4.4 SLR METHODS - ADDITIONAL SEARCH FOR RELEVANT ARTICLES

Although it is a highly effective technique, database searching has limitations in terms of identifying all relevant sources (Siddaway, Wood, & Hedges, 2019). In this study, the main limitation was some articles would not be captured through the database search because the search strategy required experiential learning or a related term to appear in the article anywhere except the full text.⁵ Therefore, an additional manual search was performed to capture as many relevant results as practically possible.

The references from M. Butler et al. (2019) were examined individually and included if they satisfied the inclusion criteria listed above. While an important paper providing key information about ELAs in general, M. Butler et al. (2019) itself was not included in the final thematic analysis of this SLR because it did not meet the inclusion criterion number four listed above. Nevertheless, M. Butler et al. (2019) specifically advocated the benefits of ELAs in accounting education and so can be expected to cite relevant papers for this review.

Additionally, references from the periodic “Accounting education literature review” were examined for the period from 2000 (Watson, Apostolou, Hassell, & Webber, 2003) to 2018 (Apostolou et al., 2019) inclusively (this set of literature reviews will subsequently be referred to collectively as the Periodic reviews). These Periodic reviews consolidate all articles published by a selection of accounting education journals for a year or a series of years together. In each Periodic review article, all instructional cases were checked for inclusion as well as references in any other section that could be relevant to the topic of this SLR.

2.4.5 SLR DESCRIPTIVE STATISTICS - ARTICLE SCREENING RESULTS

The screening process used five steps to ensure only relevant articles from the search string and additional manual searches were included in the final analysis (Table 2.2). In step one, the search string was entered into the databases, and citation details of all 803 resulting records were downloaded. In step two, all duplicate records were

⁵ Some articles such as cases prepared and published as instructional resources included an accepted theoretical foundation, but it was not one of the prominent points made within the article. As such, experiential learning or related terms were featured in the main body of the article but not in the key words, abstract or title. The search strategy could not be changed to include full text as the number of results it returned was too large and on examination most of these were not relevant to this literature review.

excluded resulting in 665 unique records. In step three, titles and abstracts of all unique records were screened based on the inclusion/exclusion criteria previously outlined, which resulted in 573 records being excluded. Full texts of the remaining 92 articles were then downloaded and reviewed. Consequently, 33 articles were included for subsequent analysis from the search string.⁶ In step five, an additional 17 articles were included for subsequent analysis from the manual search of M. Butler et al. (2019) and the Periodic reviews. As a result, a total of 50 articles made up the body of research analysed for this SLR. While there was a large overlap between the two methods, both the search string method and manual search method were required to get a more complete body of articles on this topic. Seventeen of the 50 articles would not have been found by the search string method alone and another 17 articles would not have been not found if only the manual search method was used alone. This shows how this literature review provides a more complete review of the accounting ELA literature specifically rather than relying on the Periodic review articles.

Table 2.2 Article screening process

Step 1: Compiling records From each database		
	Records identified through Emerald	26
	Records identified through OCLC	11

⁶ For the sake of efficiency, only one exclusion criteria is recorded for each article excluded from analysis. During the screening process, an article was excluded as soon as an exclusion criterion was met. The researcher did not continue reading to determine if the article met any additional exclusion criteria. However, this should not impact the reproducible nature of the SLR as the articles included in the final analysis should be consistent no matter the order of the exclusion criteria.

	Records identified through Proquest	710
	Records identified through Scopus	56
Total Records		803
Step 2: Removing duplicates		
Less:	Duplicates	138
Total Unique Records		665
Step 3: Title and abstract screening		
Less:	Not English	1
	Not journal articles	0
	Not accounting	471
	Not undergraduate university students	24
	No Specific ELAs or relevant theoretical construct	77
	No ELA efficacy assessment	0
	Total Records After Screening Titles and Abstracts	
Step 4: Full text screening		
Less:	Not English	2
	Not journal articles	2
	Not accounting	28
	Not undergraduate university students	4
	No specific ELAs or relevant theoretical construct	20
	No ELA efficacy assessment	3
	Total Records after Screening Full Text	
Step 5: Manual search		
Add:	From Periodic reviews and (M. Butler et al., 2019)	17
Total articles included in analysis		50

2.4.6 SLR DESCRIPTIVE STATISTICS - ARTICLE BIBLIOGRAPHY PROFILE

Over time there has been an increasing trend in the frequency of published articles on ELAs in undergraduate accounting courses (Figure 2.2). The research in these 50 articles was conducted in countries across four continents, including 33 articles (66%) in the USA and nine articles (18%) in Australia (Table 2.3). The locations of the studies were determined by statements of location included in the study or by the authors' university location when there was no statement. The location statistics are significantly impacted by the fact only English articles were included in this analysis. Of the 50

articles, 32 (64%) were published in Accounting Education, Issues in Accounting Education or Journal of Accounting Education (Table 2.4). These journals are accounting education journals with the highest SCImago Journal Rank Indicator out of journals specializing in accounting education.⁷

Figure 2.2 Number of papers by year published

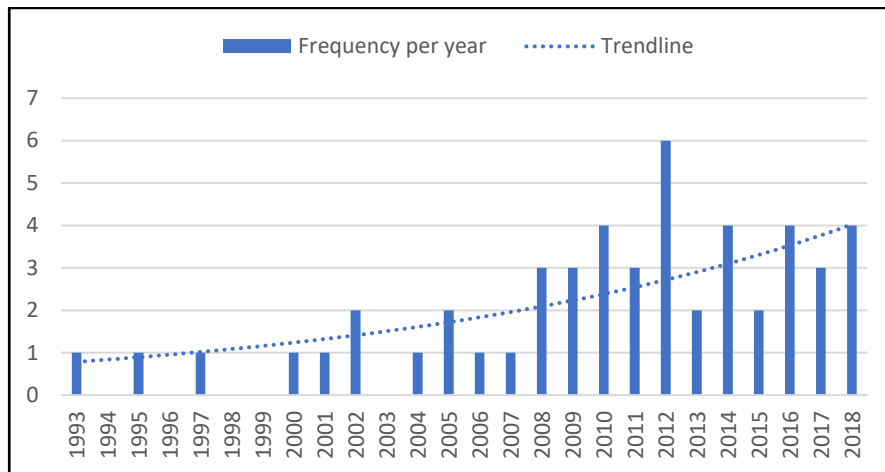


Table 2.3 Number of papers by geographic location

33	USA
9	Australia
2	South Africa
2	UK
1	New Zealand
1	Singapore
1	Spain

*One of the 50 articles did not indicate a geographic location

Table 2.4 Number of papers by journal

13	Accounting Education
10	Issues in Accounting Education
9	Journal of Accounting Education
3	Advances in Accounting Education
2	Academy of Educational Leadership Journal

⁷ The SCImago Journal Rank Indicator expresses the average number of weighted citations received in the selected year by the documents published in the selected journal in the three previous years.

2	Accounting Research Journal
1	Australasian Accounting, Business and Finance Journal
1	Education + Training
1	International Education Studies
1	International Journal of Social Sciences and Humanity Studies
1	Journal of Business and Educational Leadership
1	Journal of Economic and Financial Sciences
1	Journal of Education for Business
1	Journal of Higher Education Theory and Practice
1	Journal of information systems
1	Journal of Management Education
1	Journal of Public Budgeting, Accounting & Financial Management

2.4.7 SLR THEMATIC ANALYSIS – THEME 1 (ELA TYPES)

The first review question to be investigated is ‘What types of ELAs are researched?’.

The ELA types identified in this review were case studies, live cases, physical simulations, computer simulations, field trips, work placements, in house work placements, role plays, labs/pracs, communities of practice and games (Table 2.5).

Two articles referred to two ELAs instead of one. Barsky, Catanach, and Lafond (2008) investigated a live case and a field trip, but the two ELAs were interconnected. Huber, Law, and Khallaf (2017) investigated a field trip and two live cases compared to traditional learning activities. However, the articles that investigated multiple ELAs only assessed the efficacy of the ELAs collectively instead of separate evaluations. For more information about each type of ELA, refer to the last column of Table 2.5 for the most highly cited⁸ article that explored an instance of each ELA type respectively.

⁸ The citation information was sourced from google scholar for the sake of consistency when comparing articles. Google Scholar was the only database that captured citation information for all 50 articles included in this review.

Table 2.5 Spread of ELAs

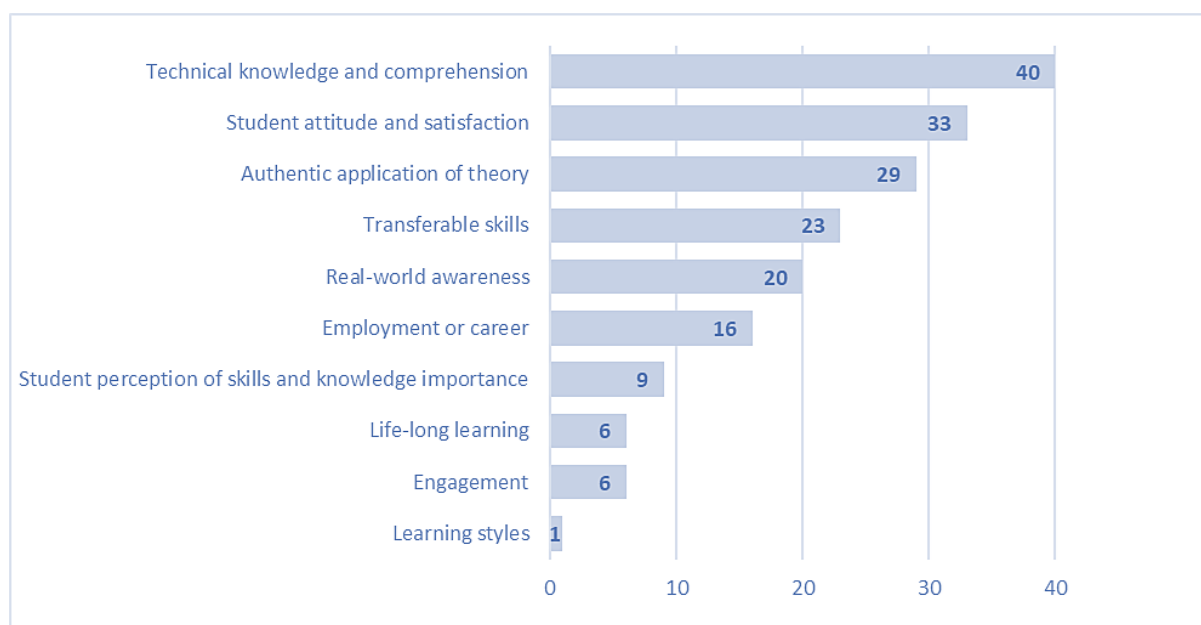
ELA name	ELA description	Freq	Example
Case Study	An historical and/or made up scenario provided to students with specified tasks for them to perform (Fortin & Legault, 2010).	14	(Wynn-Williams, Whiting, & Adler, 2008)
Live case	A real and current scenario provided to students with specified tasks for them to perform (Simons, 2016).	8	(J. Drake, 2011)
Physical Simulation	For the purpose of this research project physical simulation refers to an approximate imitation of a real world scenario which involves physical objects or actions substituting real business materials or decisions.*	6	(A. Drake, Haka, & Ravenscroft, 2001)
Computer Simulation	A virtual organization or semi-realistic microworld, which requires students to perform specific business tasks that imitate the real industry environment (Doonga, 2013).	5	(Marriott, 2004)
Field trip	For the purpose of this research project field trip refers to excursions students go on that are relevant to their field of study.*	5	(Webb, De Lange, & O'Connell, 2009)
Work placement	Students spending a set period of time doing real work for a real business in their relevant field (M. Khalil & Elkhider, 2016; Paisey & Paisey, 2010).	5	(Stanley Trevor, 2017)
In house work placement	Students spending a set period of time doing real work in their relevant field for the university (Dombrowski, Smith, & Wood, 2013; O. Khalil, 2015)	4	(Dombrowski et al., 2013)
Role play	A scenario provided to students with specified tasks for them to perform while acting out a certain role (Van Ments, 1983).	1	(Taplin, Kerr, & Brown, 2017)
Lab/Prac	For the purpose of this research project labs/pracs refer to any practical application of skills within a classroom setting such as excel class exercises or class exercises using a bookkeeping software.*	1	(Rolling, 2016)
Community of practice	A type of cooperative learning where a group of students select a particular member to act as their leader and liaise between the instructor and the group (Stephenson, 2017).	1	(Stephenson, 2017)
Educational Game	"A physical or mental contest played according to specific rules... whose main purpose is to provide not only entertainment but also training" (Noemí & Máximo, 2014)	1	(Murphy, 2005)
Not specified	One article stated an active learning environment but did not state the individual learning activity.	1	(Coram, 2005)

* The descriptions for Physical Simulation, Field Trip and Lab/Prac ELAs are not referenced because satisfactory explanations were not found in the literature so descriptions were developed for the purpose of this article.

2.4.8 SLR THEMATIC ANALYSIS – THEME 2 (RESEARCH REGARDING ELA BENEFITS)

Students' benefits from ELAs was the second theme identified by the thematic review and the second review question previously identified. The number of papers researching the potential of each benefit is shown in Figure 2.3. There were three very common benefits researched in the literature: *Technical knowledge and comprehension*, *Student attitude and satisfaction* as well as *Authentic application of theory*. *Technical knowledge and comprehension* refers to the hard-skills of understanding or retaining technical accounting knowledge. For example, both Marriott (2004) and Siegel, Omer, and Agrawal (1997) provided evidence that students understood the relevant course content better after participating in an ELA. However, Marriott (2004) demonstrated it qualitatively through students' comments while Siegel et al. (1997) demonstrated it quantitatively through exam scores. *Student attitude and satisfaction* includes all references regarding the extent of student enjoyment or interest during an ELA. For example, Taplin et al. (2017) and Marriott (2004) both provided evidence that students enjoyed the particular ELA through thematic analysis of student comments. *Authentic application of theory* refers to linking the task to the real world by practically applying theories previously learnt. For example, both Stanley Trevor (2017) and Gujarathi and McQuade (2002) presented student comments that highlight the positive effect of applying theories previously learnt in a realistic context.

Figure 2.3 Number of articles providing evidence about each benefit of ELAs



The following three benefits were moderately common in this review: *Transferable skills*, *Real-world awareness* and *Employment or career*. *Transferable skills* refers to students' soft skills, such as communication skills, team work skills and problem-solving skills. For example, Holmes and Sullivan (2018) used author/instructor observations to show that students gained research skills, technology skills, critical thinking skills, leadership skills, communication skills, and professional demeanours as a result of their ELA. *Real-world awareness* refers to insight and awareness students gained of the accounting profession in the real world. For example, Marriott (2004) provided a student comment stating they became aware of how important sensitivity analysis was in the real world after participating in the ELA. Taplin et al. (2017) provided student comments indicating how an ELA increased awareness of how important and difficult it was to uphold ethical standards in the real world. *Employment or career* refers to benefits directly in relation to the student's future career. This benefit came in two broad forms. The first was that an ELA sparked a student's interest in pursuing a career in accounting (Huber et al., 2017). The other form was where an ELA either made students more attractive to employers or outright led to employment in the industry (Gujarathi & McQuade, 2002; Stanley Trevor, 2017).

The following four benefits were identified in the review, but were uncommon: *Student perception of skills and knowledge importance*, *Engagement*, *Life-long learning* and *Learning styles*. *Student perception of skills and knowledge importance* refers to an appreciation for the importance of various skills. For example, Bautista-Mesa, Molina Sánchez, and Ramírez Sobrino (2018) showed that students' awareness regarding the importance of communication skills and teamwork increased after completing the ELA. *Engagement* refers to the attentiveness or keenness to learn. For example, both Krom (2012) and J. Drake (2011) provided evidence from instructors' observations that students were more engaged during their ELAs. *Life-long learning* refers to techniques that facilitate continuous learning throughout students' lives. For example, Chmielewski-Raimondo, McKeown, and Brooks (2016) included a student comment stating they now know learning continues after graduation throughout their career. Lastly, *Learning styles* refers to the preferred way students learn. Wynn-Williams et al. (2008) was the only article in this review which investigated students' learning styles using Kolb's learning style index (Kolb & Kolb, 2013). The study showed trends towards more balanced learning styles; however these trends were not statistically significant.

2.4.9 SLR THEMATIC ANALYSIS – THEME 3 (BARRIERS TO ELA SUCCESS)

Thirteen articles included elements that were categorized as *Barriers to ELA success*, which includes references regarding hurdles involved with implementing an ELA. However, in many cases when a hurdle was identified a plausible solution was already provided in the same article. For example, Gujarathi and McQuade (2002) identified one of the main challenges they faced was getting support from instructors for a new activity that would require even more time and effort. However, they went on to explain that making the effort to show instructors research about why and how the project would be beneficial to students and the community mitigated this challenge.

2.4.10 SLR THEMATIC ANALYSIS – THEME 4 (EXTENT OF ELAS BEING USED)

Extent of ELAs being used refers to articles investigating the extent to which ELAs are already being used in their environment. Only one article included data on this theme. Dombrowski et al. (2013) conducted an email survey of academics asking what ELAs they implement. This showed case studies were the most popular ELA with 80% of the academics employing case studies in their classes.

2.4.11 SLR OTHER RESULTS - OVERALL PERCEPTION OF ELAS

Overall, the view of ELAs was distinctly positive in this body of research. Out of the 50 articles in this review, 48 provided positive evidence of benefits. For example, Siegel et al. (1997) provided evidence that students understood the relevant course content better after participating in an ELA. On the other hand, 16 of these articles gave negative evidence regarding the benefits tested. For example, Cord, Bowrey, and Clements (2010) showed evidence that students' academic results were not improved after completing their ELA. However, all the articles providing negative evidence also presented positive evidence to support benefits of ELAs. Lastly, two articles presented insignificant results. These two articles provide neither positive nor negative evidence of the benefits investigated. For example, Wynn-Williams et al. (2008), showed that there was a slight trend towards more balanced learning styles, but the trend was not statistically significant.

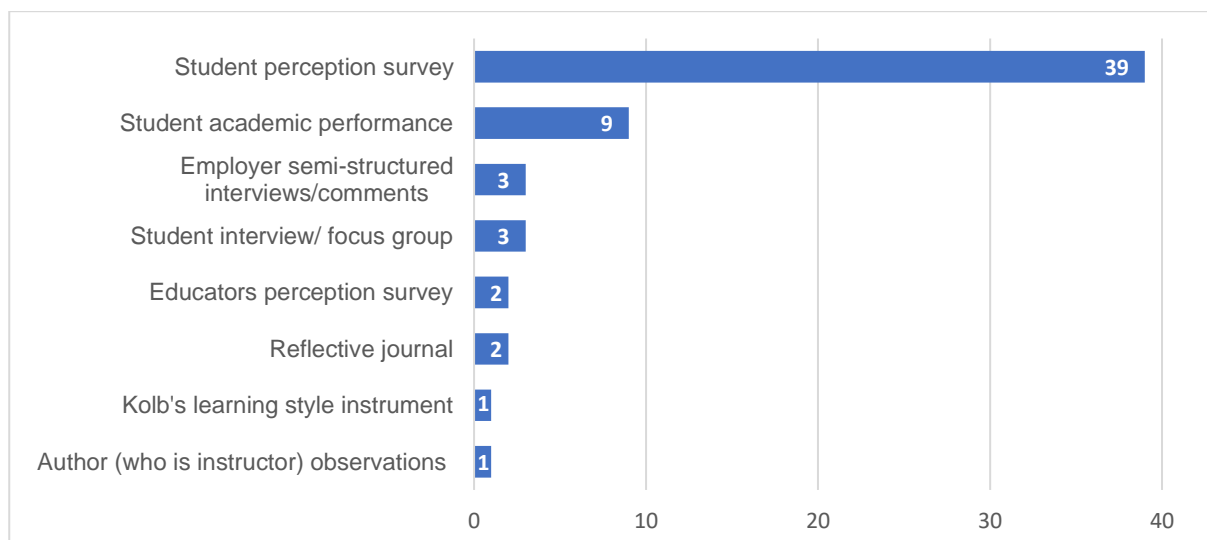
2.4.12 SLR OTHER RESULTS - RESEARCH METHODS USED TO STUDY ELAS

To help answer the third review question concerning the strength of evidence for the benefits of ELAs, the methodologies used by the articles were examined. The 50 articles used a mix of methodologies with no identifiable trends over time. More

specifically, 20 articles used a quantitative methodology, 13 articles used a qualitative methodology and 17 articles used mixed methods.

Although the literature contains a few articles that collectively cover a diverse range of collection tools, the vast majority of articles used a student perception survey to collect data, followed by student academic performance (Figure 2.4). The student perception survey is where a written questionnaire is used to record students' self-assessment of their own reactions or performance after participating in a learning task. Student academic performance is where students' results from subsequent assessments or exams are used to assess the efficacy of the learning activity.

Figure 2.4 Number of articles using each data collection tool



The total in Figure 2.4 is larger than 50 because nine articles used more than one data collection method. Of those nine, eight used two methods and one used three methods. The article with three methods assessed the efficacy of the learning task using a *student perception survey*, *educators' perception survey* and *student academic performance*. Three articles used a combination of *student perception survey* and *student academic performance*. Two articles used a combination of *student perception survey* and *employer semi-structured interview*. One used a *student interview/focus group* and *student academic performance*. The remaining two articles used a *student perception survey* in combination with a *student interview/focus group* and an *educators' perception survey*, respectively. The remaining 41 articles used only one method to collect data regarding the efficacy of the learning activity.

A wide range of data analysis methods were used by studies in this review. They were *difference in (unpaired) means* (36 articles), *quoting student comments* (20 articles), *thematic analysis* (eight articles), *paired t-test* (six articles), *regression* (one article), *recording author's perceptions* (one article), *quoting employer comments* (one article) and *factor analysis* (one article). The type of data analysis used was largely determined by the requirements of the research questions and data collection method. However, statistical techniques were generally simplistic and amounted to comparing paired or unpaired means using t-tests. This amounts to using one dichotomous variable (for example, presence or absence of the ELA) to predict a dependent variable. It is theoretically simplistic to assume no other variables influence the academic performance or attitude of students. Only one article used regression and one article used factor analysis (none used Structural Equation Modelling). The prevalence of analysing unpaired means rather than paired t-tests reflected the research design and nature of the data collected: responses in different treatments (e.g. ELA or no ELA) could not be matched to the same person, possibly to ensure the anonymity of responses. While this may be understandable from a practical perspective it is undesirable from a statistical or scientific perspective as it provides less precise estimates of the effect of the ELA.

Finally, only seven of the 13 articles using a qualitative methodology indicated the use of thematic analysis and only one of the 17 articles using mixed methods did so. While it is possible the remaining articles did use a recognised method to analyse their data this was not disclosed in these articles. The remaining 22 out of these 30 articles (73%) quoted student/employer/author comments as evidence without any indication of systematic analysis. Thematic analysis synthesizes student comments and presents the interpreted themes while most articles only presented student comments and expected readers to draw their own conclusions.

2.4.13 SLR DISCUSSION AND RECOMMENDATIONS FOR FUTURE RESEARCH

This SLR led to numerous recommendations for future research. However, only recommendations relevant to the thesis have been included in this section, as the purpose of this chapter is to provide the context/background of the thesis. More

specifically, the remainder of this section details areas for future research identified in the SLR, which are addressed by the research subsequently completed in this thesis.⁹

The first recommendation is for future research to focus on student characteristics that can affect ELA benefits. An important research question is whether an ELA benefits some students more than others; the past literature implies or assumes the benefit is similar for all students. There are many factors that could be explored ranging from basic student demographics, such as age and English language proficiency, to more advanced personal characteristics. Results from such studies could assist accounting educators in making decisions to best benefit their specific cohort of students.

The second recommendation for future research is to investigate how ELA characteristics can affect ELA learning outcomes by comparing and contrasting more than one ELA within the same study. Studies in this review tended to isolate individual ELAs by examining the application of one ELA within each study. Additional research questions include “Do different ELAs provide equal benefit?” and/or “which ELAs are better for certain desired benefits?”. Research in this direction will assist university accounting educators in making informed decisions regarding which ELAs to include in their classes. Additionally, the current ELT literature refers to ELAs collectively as a group when discussing benefits of ELAs. Following this direction of research can also provide evidence about whether the wider ELT literature is accurate in referring to ELAs as a group or whether there should be more differentiation between ELAs in the literature. For example, M. Butler et al. (2019) provides guidance on how to develop a good ELA. This research could be built on by determining if guidelines apply more for some ELA types than others, or apply more for some benefits or situations than others. Research in this area would provide more information for accounting educators developing their own ELAs or deciding which ELA, or which type of ELA, they use in their teaching.

The third recommendation is for future research to focus on assessing engagement from ELAs in more detail because it is a touted benefit of ELAs that is not well-researched. *Engagement* is a prominent benefit listed by the ELT literature, which is

⁹ For a full list of recommendations resulting from the SLR, please refer to the full article, which this section is based on – ‘ELAs in university accounting education: A systematic literature review’ by Gittings, Taplin and Kerr (2020).

further evidenced by the fact that 17 articles (34%) included engagement in the background or learning objectives. However, only six articles (12%) assessed student engagement. When engagement was assessed, instructor observations or self-assessed levels of student interaction were often used as the only indicator of engagement. Furthermore, none of the articles focused on engagement, it was simply assessed through one question/indicator included among other benefits. Engagement should be investigated more rigorously and in more detail to better reflect the importance it is given within the ELT literature.

The fourth recommendation is to employ more advanced research methods, both data collection and data analysis. While both of these will largely be dictated by research questions and practical necessity, there are several ways research can be taken to a higher level. The remaining paragraphs further explain this final recommendation regarding research methods.

Using multiple data collection methods is one aspect of the research that could be enhanced. Only nine articles (18%) in this review collected data using more than one data collection method. Using multiple data collection methods within one article is not a required standard of good research, however it can enhance the quality of the evidence and subsequently the study. If the methods are very different, the blind spot of one method could be covered by another method to provide a fuller picture and if the methods are similar, it can increase the validity of the data through triangulation (Creswell, 2018).

Research can also take more efforts to improve the estimation precision of estimated effects by removing variation from other sources. For example, the use of a paired t-test to compare measurements instead of an unpaired t-test helps remove variation between students. This requires the research to be able to match each measurement taken from the same student after the ELA. This is statistically superior to analysing unpaired responses, but can suffer from bias if respondents feel their anonymity has been compromised. There are many options to overcome this barrier¹⁰, but this review found most articles were using simple techniques.

¹⁰ For example, pre-test and post-test paper surveys can be matched for paired analysis whilst remaining anonymous by pre-numbering the pre-test survey and instructing students to record this number and include a question asking for this number on the post-test survey.

Lastly, qualitative research methods overwhelmingly consisted of quoting student comments without any documentation of how the data was analysed. Research can embrace more systematic ways of analysing qualitative data, such as thematic analysis. For more information regarding systematic qualitative data analysis, and in particular how to implement thematic analysis, refer to Creswell (2018); (Saunders, Lewis, & Thornhill, 2015). Alternatively, or in addition to this, articles can document more comprehensively how the analysis was undertaken.

Quality research is difficult to perform and the intention here is not to devalue past efforts. The simpler methods used in these reviewed articles might be acceptable in exploratory research or an emerging field, but established research fields such as medicine would find the rare use of more sophisticated techniques unacceptable (Medical Journal of Australia, 2020). Exploratory research is informative in a developing area of research. However, it can be argued research in this area is now ready to progress to higher levels of quality.

2.5 ENGAGEMENT LITERATURE

Engagement was identified as a valuable research area in the above SLR, therefore, the research contained in this thesis will focus on student engagement from ELAs. A detailed literature review regarding student engagement is provided in the following subsections.

2.5.1 ENGAGEMENT THEORETICAL CONSTRUCT

Engagement can be defined as “sustained behavioural involvement in learning activities accompanied by positive emotional tone” (Skinner & Belmont, 1993, p. 572). However, the engagement literature consistently states there is ambiguity around the meaning of engagement with no single universally accepted definition (Bryson & Hand, 2007; Kahu, 2013). Despite this ambiguity, two characteristics of engagement are consistently and widely agreed upon. First, engagement should be considered as a continuum from full engagement to complete disengagement (Bowden et al., 2021). Second, engagement is best considered as a multidimensional construct (Trowler, 2010), which consists of “distinct but interrelated dimensions” (Bowden et al., 2021, p. 3). Although there is some variation in the names of these dimensions, the most commonly accepted dimensions currently are affective, behavioural and cognitive

engagement (Appleton, Christenson, Kim, & Reschly, 2006; Bowden et al., 2021; Fredricks et al., 2004; Khademi Ashkzari, Piryaeei, & Kamelifar, 2018; Trowler, 2010).

Affective Engagement (AE)¹¹ is “the level of students’ investment in, and their emotional reactions to, the learning tasks” (Mandernach, 2015, p. 2). Indicators of AE include how interested students are in the task as well as how important and relevant they think the task is to their future endeavours. Behavioural Engagement (BE) is “the extent to which students are making active responses to the learning tasks presented” (Mandernach, 2015, p. 2). Indicators of BE include students asking questions, interacting with other students and paying attention to the instructor. Lastly, Cognitive Engagement (CE)¹² is “the extent to which students are attending to and expending mental effort in the learning tasks encountered” (Mandernach, 2015, p. 2). Indicators of CE are based on Bloom’s taxonomy (Mandernach, 2015) which identifies cognitive skill levels ranging from simple memorisation to synthesis and evaluation (Bloom, Kratwohl, & Masia, 1956).

2.5.2 MEASUREMENT OF ENGAGEMENT

Engagement can be measured using various methods such as surveys, interviews, focus-groups and experience sampling (Mandernach, 2015). These methods can be used to collect engagement data from three perspectives: the student; the educator; and/or an independent observer (Mandernach, 2015). However, student self-assessment is the only perspective that can measure all three dimensions of engagement because only the student can report what he/she thinks (CE) and feels (AE) (Fredricks et al., 2004). Surveys are predominantly used to measure student engagement from the student perspective because it is the most efficient method to systematically collect data from large numbers of students (Check & Schutt, 2012).

In the current literature, engagement is measured from an institution or a course¹³, which are commonly referred to respectively as institutional level engagement and course level engagement (Mandernach, 2015). Institutional level engagement instruments “evaluate students’ levels of engagement” in relation to the whole

¹¹ AE can also be referred to as emotional engagement or psychological engagement (Sutherland, 2010).

¹² CE can also be referred to as intellectual engagement (Sutherland, 2010).

¹³ Course is equivalent to Unit in Australian terminology.

university experience (Butler, 2011, p. 259). Measuring engagement at this institutional level can be useful for institutions to diagnose which departments or degrees/diplomas have low engagement or to compare the same degree/diploma between institutions. Institutions typically offer a large number of degrees/diplomas which are made up of many individual courses. For example, to obtain an accounting degree a student would typically take many courses over several years. Course level engagement instruments evaluate students' engagement from these individual courses (Mandernach, 2015). These were developed because they provided potential for more immediate change and created accountability for individual educators (Handelsman, Briggs, Sullivan, & Towler, 2005; Ouimet & Smallwood, 2005).

Mandernach (2015) provides a list of engagement instruments at an institutional level and course level. The main institutional level instrument is the National Survey of Student Engagement (NSSE). The NSSE uses items regarding various behavioural indicators to measure engagement and is extensively used in the United States (Mandernach, 2015). Several other instruments with slightly different scopes have also been developed, often by adapting the NSSE, such as the Beginning College Survey of Student Engagement (BCSSE) and Community College Survey of Student Engagement (CCSSE). These instruments tend to all have a broad focus, which is suitable for monitoring individual institution's progress and comparing institutions on the basis of fostering student engagement (Mandernach, 2015).

The course level instruments include the Classroom Survey of Student Engagement (CLASSE), Student Engagement Index (SEI), Student Course Engagement Questionnaire (SCEQ) and Student Engagement Survey (SE). The SEI was developed for high school students, but the remaining instruments were all aimed at tertiary students. The SE and CLASSE instruments were both developed based on the NSSE (Ahlfeldt, Mehta, & Sellnow, 2005; Ouimet & Smallwood, 2005). The SCEQ was developed inductively based on faculty and student responses to 'what do engaged students do, feel and think?' (Handelsman et al., 2005).

2.5.3 IMPORTANCE/SIGNIFICANCE OF ENGAGEMENT

Actively fostering high levels of engagement is a stepping stone to achieving a wide range of meaningful benefits for both students and universities (Bowden et al., 2021; Trowler, 2010). Therefore, researching how to foster and improve engagement is

important for both these stakeholders. The following paragraphs detail the benefits of increased student engagement for students and universities.

Students benefit from increased engagement both personally and academically (Bowden et al., 2021; Trowler, 2010). On a personal level, when their engagement at university is improved, students feel a greater sense of belonging (Bowden et al., 2021; O'Keeffe, 2013), satisfaction (Trowler, 2010) and confidence (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2011; Trowler, 2010). On an academic level, improved engagement has been consistently linked to better transferable skills (Endo & Harpel, 1982; Gellin, 2003), practical competencies (Kuh, 1993), cognitive development (Astin, 1993; Pascarella & Terenzini, 2005) and moral/ethical development (Jones & Watt, 1999; Trowler, 2010). On the other extreme, disengagement can result in dropping out and/or performing unsatisfactorily, which can lead to debt accumulation and/or inferior employment prospects (Chipchase et al., 2017).

For the university, increased engagement leads to increased profitability by enhancing the university's reputation (Alan, Kabadayi, & Cavdar, 2018; Bowden et al., 2021; Sung & Yang, 2008) and improving student retention rates (Bean, 2005; Khademi Ashkzari et al., 2018; Kuh et al., 2008). For individual academics, increased student engagement increases job satisfaction resulting from interacting with more responsive students (Trowler, 2010).

There is no dispute in the literature regarding engagement being beneficial and important to measure (Bowden et al., 2021; Trowler, 2010), but most of this discussion is centred on institutional level engagement. Research regarding course level engagement was established because more immediate change could be made at this level compared to the institutional level (Handelsman et al., 2005). More specifically, it is hard to use institutional level engagement data to modify education because it is too broad to specify what needs improvement and it can be difficult to make individual educators accountable (Handelsman et al., 2005).

The argument to measure engagement from a course rather than engagement from the institution can also be used to justify measuring engagement from an activity rather than (or as well as) engagement from a course. For example, if an educator wishes to improve engagement in their course, an obvious place to start would be to examine the

level of engagement for each activity used in the course. Activities with low engagement might be discontinued, replaced or improved. Theoretical arguments for a specific activity over alternative activities are important, however this is insufficient if students do not engage with the activity. Therefore, having tools to measure student engagement at an activity level would assist educators make informed, evidence-based decisions when taking steps to improve their students' engagement. However, the literature has no instrument to measure engagement at an activity level (i.e. to measure student engagement from one activity).

2.6 SUMMARY

This chapter reviewed the literature relevant to this article using a combination of traditional literature review methods followed by a Systematic Literature Review (SLR). The landscape of accounting higher education as well as ELT was explored in a traditional literature review. The SLR filled a significant gap in the literature by interpreting the body of research published about identifiable ELAs. Specifically the SLR focused on benefits of ELAs and engagement emerged as an important, but under-researched benefit. Therefore, the theoretical construct, measurement and importance of student engagement was presented in this chapter because engagement will be a focus in this thesis. Actively fostering high levels of engagement is a stepping stone to achieving a wide range of meaningful benefits for both students and universities. The next chapter will build on this foundation by forming hypotheses for the research conducted for this thesis.

CHAPTER 3: HYPOTHESIS DEVELOPMENT

3.1 OVERVIEW

This chapter provides a comprehensive list of the objectives, research questions and associated hypotheses to be investigated in this thesis. Justification for the development of the hypotheses will also be detailed.

3.2 OBJECTIVES AND RESEARCH QUESTIONS

As previously mentioned in Chapter 2, the current literature only provides established instruments to measure student engagement at an institutional and course level (Mandernach, 2015), but not for an activity level. Measuring student engagement in detail at an activity level is valuable because more immediate change can be made at this level compared to the institutional or course level. More specifically, if an accounting instructor wishes to improve student engagement in their course, an obvious place to start would be to maximise student engagement with the individual activities which make up the course. There are a number of ways an instructor may need to assess student engagement at an activity level to suit their individual circumstances. For example, an instructor may have two different activities to teach the same topic and want to use each activity in consecutive semesters then assess the engagement from each activity in detail to determine which activity to use going forward. On the other hand, an instructor may need to remove an activity from their course and want to compare student engagement between the activities within one semester to decide which one to remove. Therefore, see Objective 1 and 2 below which aim to provide an activity level instrument suited to each of the above two examples, respectively:

Objective 1 – Develop a survey instrument to measure university accounting students' engagement from one ELA.

Objective 2 – Develop a survey instrument to compare university accounting students' engagement from multiple ELAs.

As previously mentioned in Chapter 2, the current literature does not provide empirical evidence regarding what factors affect student engagement at an activity level. Therefore, see Objective 3 below which aims to use the above mentioned instruments to address this gap in the literature:

Objective 3 – Investigate and compare university accounting students’ engagement from various ELAs.

Objective 3 can be broken down into two groups of factors which may affect student engagement with an activity. Firstly, a student’s characteristics (such as gender and past experiences) may affect how the student engages with an activity. Secondly, students’ engagement with an ELA may be affected by various characteristics of that ELA (such as length and how current the content is). Understanding the determinants of student engagement is important as it can help educators when designing ELAs to maximise student engagement. Therefore, Objective 3 has two associated research questions (RQs) as listed below:

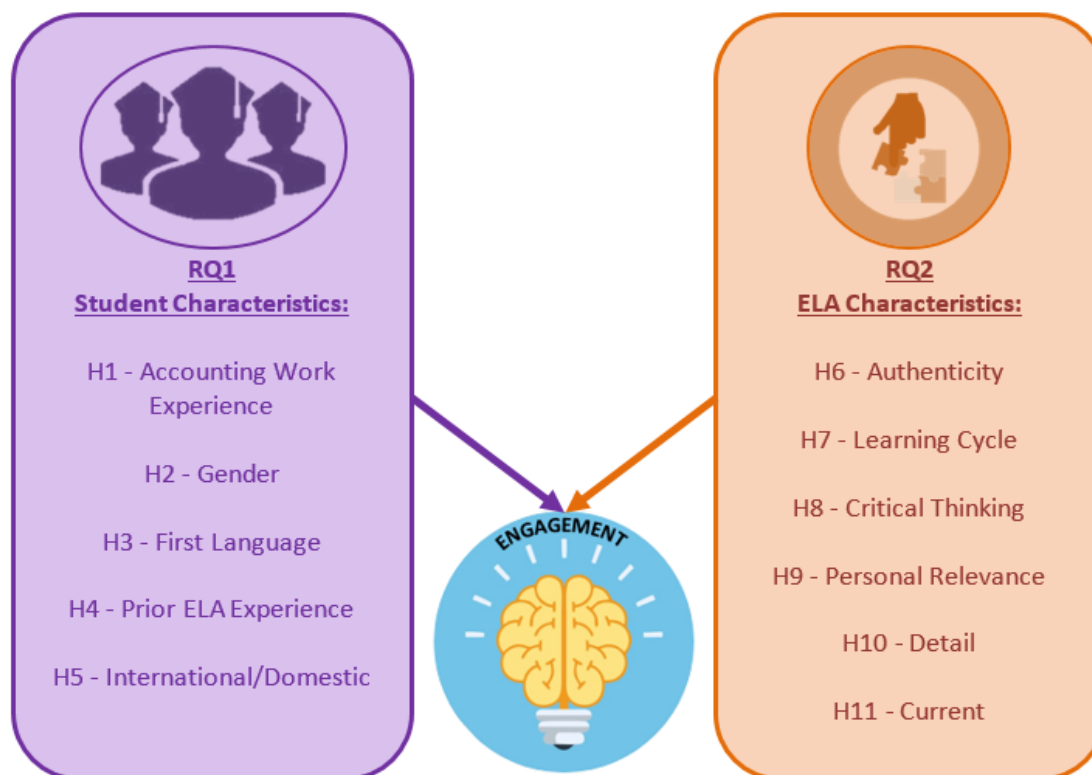
RQ 1 – What student characteristics can influence student engagement from ELAs?

RQ 2 – What ELA characteristics can influence student engagement from ELAs?

3.3 HYPOTHESES

A total of 11 hypotheses were developed to answer the two research questions listed above. Each hypothesis investigates what effect a student or ELA characteristic has on student engagement with an ELA. Figure 3.1 below provides a visual representation of the research questions and their associated hypotheses, which will be tested in this thesis. Each of these hypotheses will be further explained in the following sections.

Figure 3.1 Representation of Research Questions and Hypotheses



3.3.2 HYPOTHESES TO ADDRESS RQ1

To answer RQ1, various student characteristics were identified to determine if there is reason to expect a link between the student characteristic and student engagement. Since the current literature does not investigate activity level engagement as a primary dependent variable, relationships between these demographics and other variables such as learning outcomes (instead of student engagement) were researched to determine the likelihood of a relationship between the demographic and engagement. For example, Jenkins, Holley, and Pushkin (1991) investigate gender differences in learning style preference and the results demonstrate female students prefer watching to learn whilst males prefer actively thinking. This study did not investigate a relationship between gender and student engagement, however it would be logical to extrapolate from this result that students would engage differently with ELAs depending on gender if students have differing preferences in learning style. Lastly, some student characteristics were based on the honours study preceding this thesis. The remainder of this section identifies and explains each of the student characteristics tested in this thesis¹⁴.

¹⁴ The hypotheses are discussed sequentially as per the hypothesis numbers except for H5, which is discussed together with H3 (before H4) because these two hypotheses are very closely related. This hypothesis numbering order was chosen to achieve the best readability in the results chapters.

The literature search showed the perceived value students place on a learning activity can also be affected by students' work experience in the field of study (Graham & McKenzie, 1995). Students' views are often put into a more realistic perspective when they gain relevant work experience. This is because, as a student gains relevant work experience, their views are broadened and put into a more realistic perspective. This change in perspective can in turn change student's perceived value of a learning activity, which may in turn affect their engagement with the activity. Assuming the activities included in students' courses do teach skills and knowledge needed to work in the relevant field, relevant work experience would improve students' perceptions of the activities. Therefore, the hypothesis related to accounting work experience is:

H1 - There is an association between a student's engagement from an ELA and the extent of accounting work experience the student has.

Whilst controversial, there are arguments in the literature that gender can impact students' learning. In accounting, Jenkins et al. (1991) demonstrate female students prefer watching to learn whilst males prefer actively thinking. Studies in other disciplines, however, argue that females prefer to learn more actively. This link between gender and learning approaches was deemed sufficient cause to investigate gender's relationship to student engagement with ELAs as well. However, the controversy in the literature means there is not a clear direction for this proposed relationship. Therefore, the hypothesis related to gender is:

H2 - There is an association between a student's engagement from an ELA and the student's gender.

A study comparing learning preferences across seven countries concluded participants' nationality significantly contributed to differences in learning preferences (Joy & Kolb, 2009). Similarly to gender, evidence of this relationship was deemed sufficient to warrant investigation of the relationship between students' nationality and student engagement. Student nationality will be represented by students' first language and whether they are international or domestic students, for the purpose of this study. Therefore, the hypotheses related to students' nationality (Domestic/International and first language) are:

H3 - There is an association between a student's engagement from an ELA and the student's first language.

H5 - There is an association between a student's engagement from an ELA and whether the student is international or domestic.

The Honours thesis preceding this research investigated various student demographics and their relationships with student preferences between ELAs (Gittings, 2017). The study found one of the most significant predictors of preference for ELAs was students' amount of prior experience with ELAs. This was also in line with expectancy value theory, which suggests if a student has a positive experience with a particular learning approach it will increase their perceived value associated with that learning approach (Pintrich, 2003). Based on expectancy value theory, it also seems likely the relationship found between students' ELA experience and preferences may also extend to student engagement. Therefore, the hypothesis related to past ELA experience is:

H4 - There is an association between a student's engagement from an ELA and the extent which the student has already experienced that ELA.

3.3.3 HYPOTHESES TO ADDRESS RQ2

To answer RQ2, the broader education literature and the accounting education literature were searched for characteristics or criteria for good ELAs. A combination of sources were used to compile a list of six criteria for the purpose of this study. These six criteria were each converted into a hypothesis and will be individually explained below.

Authenticity and Learning Cycle were both originally derived from the "principles of good practice for all ELAs" (National Society for Experiential Education, 2013, p. 1). For the purpose of this study, Authenticity refers to an ELA using a real and well-known event/company¹⁵ and Learning Cycle refers to the extent which the ELA incorporates all four learning cycle steps. Besides being one of the principles of good practice, components associated with these two characteristics have been emphasized in a range of literature (Boyce, Williams, Kelly, & Yee, 2001; M. Butler et al., 2019; Kosnik, Tingle, & Blanton, 2013; McWilliams & Nahavandi, 2006; Young, Caudill, & Murphy, 2008). Therefore, the hypotheses related to Authenticity and Learning Cycle are:

¹⁵ Activities that only approximate real-world activities were not included in this definition because it is notoriously difficult to capture the complexities and 'greyness' of real events when approximating real-world events for an activity. Dealing with the complexities of a real company/event is part of what makes them valuable for teaching because they help students develop critical thinking and better prepare students to deal with things in the real world where they will not be clear-cut textbook scenarios.

H6 - There is a positive association between the authenticity of an ELA and student engagement with the ELA

H7 - There is a positive association between the extent to which an activity incorporates all steps of the learning cycle and student engagement with the ELA

Critical Thinking was included as a criteria for a good ELA because the literature posits a reason to use ELAs is to enhance students' critical thinking skills. For the purpose of this study, activities which involve advanced critical thinking components are activities which involve "problem articulation, research, decision modelling, risk analysis, or decision-making" (M. Butler et al., 2019, p. 15). When providing guidance on how to design a good ELA, M. Butler et al. (2019) emphasizes critical thinking is a prominent benefit of using ELAs because it is a desirable graduate capability. However, it could also be argued that critical thinking is an important benefit of ELAs because it engages students. Therefore, the hypothesis related to Critical Thinking is:

H8 - There is a positive association between the level of critical thinking required by an ELA and student engagement with the ELA

Personally Relevant is included as criteria for a good ELA in this study because the literature suggests it significantly increase students' emotional investment, which lead to improved learning outcomes. For the purpose of this study, an ELA is personally relevant if it is centred on something local and attempts to place students in a scenario where the topic would be relevant/important to them. Through student feedback McWilliams and Nahavandi (2006) showed students' emotional investment was improved when a live case was used to teach ethics. Additionally, Story, Yukhymenko-Lescroart, and Deitz (2020) demonstrate that increased interest in the topic improved students' learning outcomes through the use of structural equation modelling.

Therefore, the hypothesis related to Personally Relevant is:

H9 - There is a positive association between the personal relevance of an ELA and student engagement with the ELA

Detail was included as a criteria in this study because the literature suggests the level of detail provided in a scenario for a case study affects learning outcomes. For the purpose of this study, an ELA is very detailed if it gives rich context/background information and if more than what is strictly needed to complete the ELA is included.

Based on a range of guidance for writing cases in the literature, providing rich context and extra information not required to answer the case questions can lead to deeper learning (McGuire & Whaley, 2017; Naumes, 2006; Reynolds, 1978). Therefore, the hypothesis related to Detail is:

H10 - There is a positive association between the level of detail provided by an ELA and student engagement with the ELA

Current is included as criteria for a good ELA in this study because the literature suggests it improves student engagement. For the purpose of this study, an ELA is current if it explicitly includes a date in the scenario which is within the last two years. McWilliams and Nahavandi (2006) argue it is easier to engage students with live cases versus regular cases and the primary difference between live and regular cases is the fact live cases deal with current scenarios. Therefore, the hypotheses related to Current is:

H11 - There is a positive association between an ELA being current and student engagement with the ELA

3.4 SUMMARY

This chapter provided an overview of the objectives, research questions and their associated hypotheses this thesis aims to address. The following chapter provides, develops and pilot tests the post-ELA instrument, which address Objective 1 described above. This instrument will then be used to investigate Research Question 1 and its associated hypotheses in Chapter 5. Then Chapter six will detail the development of the End-of-semester (EOS) survey instrument to address Objective 2 as well as use the EOS survey to investigate Research Question 2 and its associated hypotheses.

CHAPTER 4: PHASE 1 (POST-ELA ENGAGEMENT ASSESSMENT) – INSTRUMENTS DEVELOPMENT AND PILOT TESTING

4.1 OVERVIEW

This chapter details the development and pilot testing of all instruments used to measure student engagement from a single ELA in detail. This involved initial development of the Post-ELA engagement instruments (Section 4.2), pilot testing (Sections 4.3 and 4.4) and pre-testing (Section 4.5), including the modifications to instruments resulting from each of these steps. The Post-ELA engagement instruments covered in this chapter are a student survey, observation notes, instructor interview, instructor survey and student focus group (The final versions of which can be seen in Table 1.1Appendix 11:, Table 1.1Appendix 10:, Table 1.1Appendix 5:, Table 1.1Appendix 9: and Table 1.1Appendix 7:, respectively).

4.2 INITIAL DEVELOPMENT OF INSTRUMENTS

This section describes the initial development of the student survey, observation templates, instructor interview questions and student focus group questions in each of the following subsections, respectively.

4.2.1 STUDENT SURVEY

A student survey (Table 1.1Appendix 2:), which requires students to self-assess their engagement from an activity, was designed for this study. The survey consists of two parts: an engagement scale and other/demographic items. Just as course level instruments were developed by modifying institutional level instruments, this activity level engagement scale was initially developed by modifying three course level scales: the 49 item Classroom Survey of Student Engagement (CLASSE) by Ouimet and Smallwood (2005), the 23 item Student Course Engagement Questionnaire (SCEQ) by Handelsman et al. (2005) and the 14 item Student Engagement Survey by Ahlfeldt et al. (2005).¹⁶

¹⁶ Institutional level instruments were not included as source instruments because they are further removed from an activity context compared with course level instruments and were unlikely to supply additional items applicable to an activity level because course level instruments were often developed from institution level instruments.

Items which could be adapted to an activity focus were extracted from all three foundational instruments and listed together, then categorized into Affective, Behavioural and Cognitive Engagement (AE, BE and CE) based on literature definitions. These items were then altered to fit under one of three question stems, but the alterations were minimal to retain wording and purpose as close to the original items as possible. For example, the SCEQ instrument contained an item which asked students how characteristic it was for them to “ask questions when I don’t understand the instructor”. This item was modified to ask students “how frequently do you... ask questions when you don’t understand the instructor”.

In order to supplement the past instruments and minimize the risk of missing an important aspect of engagement, theory provided by Fredricks et al. (2004) was also used to develop engagement items at an activity level. Engagement literature presents the idea that engagement should be considered as a continuum from complete engagement to complete disengagement (Bowden et al., 2021). Therefore, Fredricks et al. (2004) was used to identify indicators of disengagement and negatively worded items were developed based on these indicators. For example, boredom was included as an indicator of disengagement within AE based on the information provided by Fredricks et al. (2004).

Table 4.1 details all the engagement items included in the initial engagement scale as well as the respective Likert-scale question stem and item source(s). The first column details all the engagement items and the second column identifies each item’s source(s). These item labels are constructed in three parts. The first letter represents the type of engagement (‘A’ for AE, ‘B’ for BE and ‘C’ for CE). The second letter represents what the items are based on (‘F’ for theory provided by Fredricks et al. (2004) and ‘I’ for past instrument items). Lastly, the number is added to make each question label unique. The items are listed in alphabetical order according to this item number within each question stem section, but not for the table as a whole.

Table 4.1 Survey Engagement Items Sources

Item	Source
During this learning activity how frequently did you do each of the following: (Five-point Likert-scale from 'Never' to 'Almost all the time')	
BF2. Do unrelated activities such as social media or internet browsing	Fredricks ^P
BF3. Go off topic in group discussions	Fredricks ^P
BI1. Ask questions when you didn't understand the instructor	CLASSE ^P , SCEQ, SE ^P and Fredricks ^P
BI2. Contribute to a class discussion	CLASSE ^P , SCEQ ^P and SE ^P
BI3. Help fellow students	CLASSE ^P , SCEQ ^P and SE ^P
BI5. Actively take notes	CLASSE ^P and SCEQ ^P
BI6. Participate actively in small group discussions	CLASSE ^P , SCEQ and SE ^P
To what extent has this learning activity emphasized each of the mental activities below: (Five-point Likert-scale from 'Not at all' to 'Very much')	
CI1. Analysing the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components.	CLASSE and SE
CI2. Evaluating the value of information, arguments or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions.	CLASSE ^P and SE
CI3. Applying theories and/or concepts to practical problems or new situations.	CLASSE and SE
CI4. Memorising facts, ideas or methods from your course material so you can repeat them in almost the same form.	CLASSE and SE
CI5. Synthesizing and organizing ideas, information or experiences into new more complicated interpretations and relationships.	CLASSE and SE
During this learning activity, I... : (Five-point Likert-scale from 'Strongly disagree' to 'Strongly agree')	
AF1. Was bored and unstimulated	Fredricks ^P
AI1. Made an effort	SCEQ ^P and Fredricks ^P
AI2. Was interested	CLASSE ^P , SCEQ ^P and Fredricks ^P
AI3. Had fun	SCEQ ^P and Fredricks ^P
AI4. Acquired/improved job related knowledge and skills	SE ^P
AI5. Was challenged to do my best work	CLASSE
AI6. Thought the learning goals were not relevant to me and my future endeavours	SCEQ ^P
BF1. Was focused and on task	Fredricks ^P
BI4. Listened carefully to the instructor when he/she was talking	SCEQ ^P

CLASSE refers to the Classroom Survey of Student Engagement by Ouimet and Smallwood (2005).

SCEQ refers to the Student Course Engagement Questionnaire by Handelsman et al. (2005).

SE refers to the Student Engagement Survey by Ahlfeldt et al. (2005).

Fredricks refers to the theory obtained from Fredricks et al. (2004) as previously described.

P: The relevant item is paraphrased from this source (items without this indication were taken from the source instrument without any significant changes).

Table 4.2 lists the demographic/other items included in the survey with a description of the response options provided in brackets. The first four demographic items were based on a previous study investigating student preferences between different ELAs (Gittings, 2017). This previous study found a significant positive relationship between the extent of students' prior experience with a type of ELA and their preference for that specific ELA type (Gittings, 2017). Therefore, this survey included a demographic item regarding students' past level of experience with the relevant ELA type to investigate if this relationship extends to student engagement being affected by ELA experience as well. Student type, gender and first language are included because they are interesting variables that may explain variation in engagement. Work experience in accounting is included because past studies have shown relevant work experience can influence students' perception of a learning activity (Graham & McKenzie, 1995).

Table 4.2 Demographic Items

To what extent have you experienced role plays at university before this class (A five-point Likert-scale from never to almost every class)
To what extent have you experienced case studies at university before this class (A five-point Likert-scale from never to almost every class)
To what extent have you experienced physical simulations at university before this class (A five-point Likert-scale from never to almost every class)
To what extent have you experienced computer simulations at university before this class (A five-point Likert-scale from never to almost every class)
Your gender (Male or Female)
Is English your first language (Yes or No)
Your student type (International or Domestic)
Your work experience in accounting* (None, Up to 4 weeks, Over 4 weeks)

* Students were asked to specify whether they have more or less than 4 weeks experience to try distinguish between those who have only done vacation work (a lot of vacation work programs at the Big 4 accounting firms are four weeks) and those who have done more than vacation work.

4.2.2 OBSERVATION TEMPLATES

Two observation templates were prepared for this study. The first template (Table 1.1Appendix 3:) collected data regarding student engagement from an ELA. The Behavioural Engagement Related to Instruction (BERI) instrument by Lane and Harris (2015) was used for this observation sheet focused on student engagement. The purpose of this observation sheet is predominantly to assist with validating the self-assessed engagement data collected from students.

The second template (Table 1.1Appendix 4:) collected data regarding the classroom environment and how an ELA was delivered to students. This observation sheet was developed for this research project. The purpose of this data was to have qualitative data describing the learning circumstances, which could later be used to potentially explain quantitative results. As such, this observation sheet was only semi-structured and contained guidelines inspired by a range of qualitative classroom observation materials (Meehan et al., 2004; Wheeler, Navy, Maeng, & Whitworth, 2019). The first question asks about instructor demeanour. The next two questions collect information about the order of delivery in the class and for the activity. The last question collects data on what the instructor physically does during the class and/or activity. All these questions were included because it is possible they affect students' behaviour or engagement. Although specific questions were detailed in the template, the nature of class observations is that the observer records anything which stands out to them. As such, the template was developed to be a guide only, not a rigid form to complete.

4.2.3 INSTRUCTOR INTERVIEW QUESTIONS AND SURVEY

The instructor interview (Table 1.1Appendix 5:) contains two sections. The first section is comprised of two questions, which asked instructors what student behaviours indicate engagement and disengagement, respectively. This data is primarily used to supplement the instructor survey, as explained in the following paragraph. The second section is comprised of one question, which asked instructors about their attitude towards ELAs. This data will primarily be used to provide potential reasons for quantitative results achieved. For example, if these questions reveal that an instructor believes ELAs are ineffective teaching tools, it is possible this attitude would impact their students' engagement score achieved with the ELAs.

The instructor survey (Table 1.1Appendix 6:) was developed based on the student engagement survey and the observation notes. BE questions in the student survey were adapted to be asked from the instructor's perspective. The questions were adapted to record the portion of the class that demonstrated each engagement indicator, similar to the use of the observation sheet. For example, a question in the student survey asked, "During this learning activity how frequently did you... actively take notes". The instructor survey adapted this question to ask the instructor, "During this learning activity approximately what percentage of students did you observe... actively taking notes". This is the section of the survey that could be supplemented by the instructor interview. For example, if an instructor identified an engaged or disengaged behaviour that is not included in the instructor survey it could then be added to the survey before he/she completed it as well as to any subsequent instructor surveys. Additionally, the instructor survey included a number of questions designed to assess the instructor's attitude towards ELAs and the particular ELA taught.

4.2.4 STUDENT FOCUS GROUP QUESTIONS

The student focus group questions (Table 1.1Appendix 7:) were developed based on the student survey. The focus group questions were designed to probe and provide additional insights regarding students' experience and engagement with the ELA. The survey and focus group instruments were designed to collect engagement data from the same individuals, but the focus group aimed to get qualitative feedback from fewer students compared to quantifiable data from a larger number of students. For example, the survey asked students how much each of the mental activities was emphasized by the ELA on a five-point Likert scale. The focus group asked students which of the mental activities were most emphasized by the ELA and to give an example so they demonstrate their understanding of the mental activity.

4.3 PILOT TESTING

The pilot testing involved testing all the instruments described above. The objective of this pilot test was to evaluate how the instruments work in reality and how they interact with each other, not to make conclusions about predictors of student engagement from this data. The student survey was administered in paper form at the end of the class in which the activities occurred, the observation notes were completed while students completed the activity, and the instructor interview and survey were completed shortly after the classes. Students who participated were given a small chocolate worth less

than \$1 each. The following sections provide details regarding the pilot test sample and results.

4.3.1 SAMPLE

The sample consisted of ten classes in a first-year undergraduate course at Curtin University (Perth, Australia), which provides an introduction to global perspectives on conducting business in a global context. Five different instructors facilitated the classes (two classes per instructor). A total of 187 students attended the ten classes included in this pilot test. Although this course was not classified as an accounting course, it included accounting students because it is a core first year course for the accounting undergraduate major.

4.3.2 DATA CLEANING – STUDENT SURVEY DATA

A total of 176 student surveys were collected, which gave an initial response rate of 94%. However, 62 surveys were removed during data cleaning resulting in a valid response rate of 61%. The high initial response rate and large portion of surveys removed during data collection is likely due to the fact respondents were given an incentive to participate in the survey whether or not they completed it appropriately. The following paragraphs detail the data cleaning process. In addition to the steps detailed below, the physical copies of all surveys removed during data cleaning were checked for data entry errors before removal.

Six responses were excluded based on missing/unusable responses. This included instances where respondents did not answer a question (3 surveys), gave an invalid response to a question (1 survey) or both (2 surveys). Invalid responses entailed multiple responses selected on Likert-scale questions, making a selection between two numbers and/or selecting the labels instead of the numbers on the Likert-scale questions.

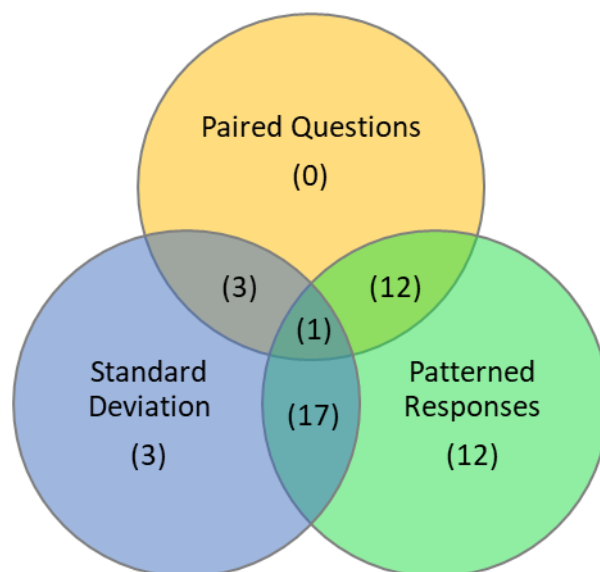
Forty-eight respondents were excluded due to inappropriately/illogically completing the questionnaire. This included surveys where students did not give legitimate answers, which was evident in a number of ways. The following paragraphs further detail the methods used to identify illegitimate answers. Furthermore, Figure 4.1 presents a Venn diagram detailing the number of responses removed due to each of the reasons explained below.

Firstly, respondents' answers to a pair of questions asking about the same idea positively and negatively were analysed. The question pair embedded in this survey design contained one question asking if the student was interested during the activity and the other asked if the student was bored during the same activity. If a respondent answered strongly agree to both those questions, it is likely they were not providing legitimate responses.

Another method used to detect inappropriately completed surveys was using standard deviations of their responses because a large portion of the survey consisted of Likert questions. For example, if a student simply selected 5 on the Likert-scale all the way down the page, their standard deviation would be 0. This would indicate the responses provided were potentially not legitimate.

The last method used to detect inappropriately completed surveys was visual inspection of the questionnaires for patterned responses. For example, respondents may answer questions in a diagonal line down each of the sections, which can be seen when visually inspecting the survey. However, it is noted that questionnaires identified with each of these three methods individually could be legitimate responses. For example, a respondent could have a standard deviation close to 0 simply because they agree with most of the statements. Therefore, all three methods were looked at in combination to avoid incorrectly excluding surveys from the study.

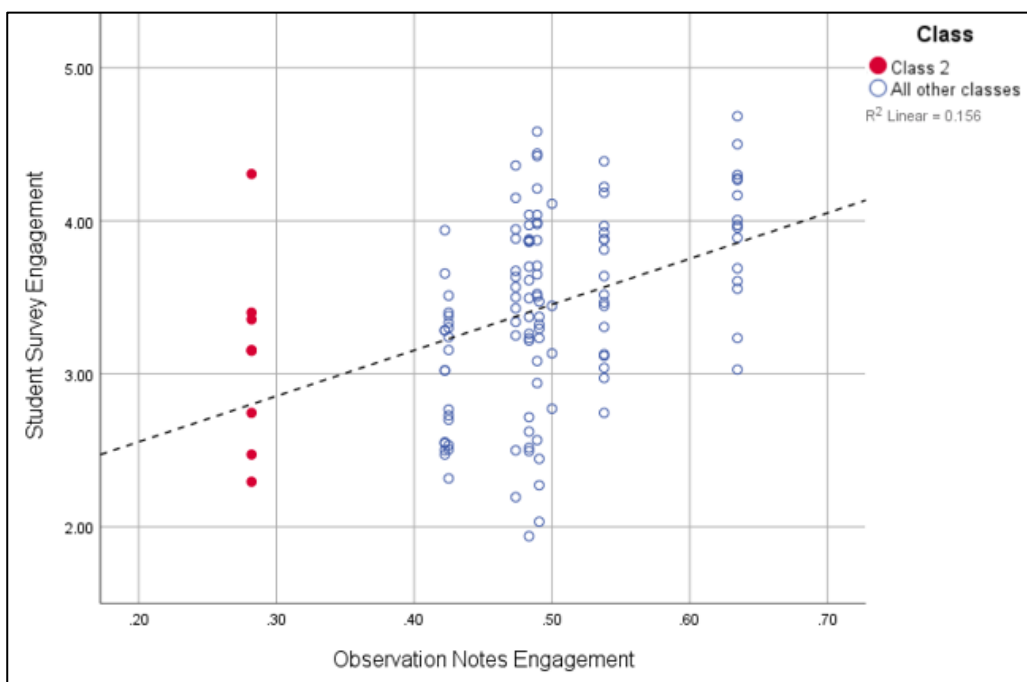
Figure 4.1 Venn Diagram of Inappropriately Completed Surveys



Lastly, student engagement data from the student perspective was plotted against the observer and instructor perspective and visually examined for any irregularities to ensure the pilot test data was clean rather than risk having inaccurate data. Figure 4.2 depicts the graph of engagement from the observation notes vs the student survey.

Figure 4.3 presents the graph of engagement from the instructor survey vs the student survey. For both graphs, the y-axis depicts student self-assessed engagement, which is the average of all engagement questions in the student survey.¹⁷ The x-axis details the average of all engagement questions from the observation notes and instructor survey, respectively.¹⁸ For both graphs, each student participant is represented by a dot which shows the student's self-assessed engagement plotted against his/her class's observed engagement or instructors observed engagement. A trend line was then fitted to each graph.

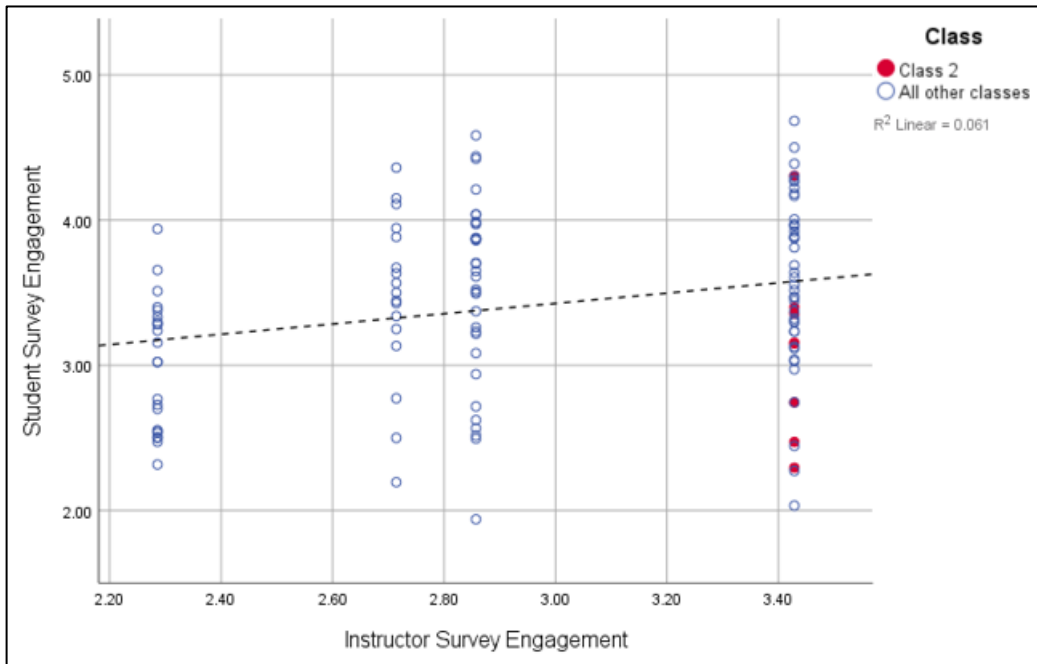
Figure 4.2 Student Survey vs Observation Notes



¹⁷ Calculations of student engagement from the student survey data will be further explained in Section 5.5.10 below.

¹⁸ Calculations of student engagement from the observation notes data and instructor data will be explained in more detail in Section 4.4.2 below.

Figure 4.3 Student Survey vs Instructor Survey



A visual inspection of the above graphs revealed class 2 did not fit the apparent positive trend in the data. Both graphs above differentiate students within class 2 by representing them with solid red dots whereas all other classes are represented by dots with a blue outline. The average student self-assessed engagement for the eight students in class 2 appeared average (not particularly high or low) compared to students in other classes while the student engagement recorded in the observation notes is quite low and the student engagement from the instructor perspective is very high. Therefore, in order to avoid the risk of having inaccurate data, the eight students from class 2 were excluded from subsequent analysis because none of the three perspectives corresponded as they did for other classes without any clear explanation for the disparity.

4.3.3 DATA CLEANING – ALL OTHER DATA

The quality of data from the instructor interviews, instructor surveys and focus groups were critically evaluated. Only a handful of instructors were approached to complete the survey and participate in the interview. The interviews were conducted face-to-face and all instructors interviewed answered all questions. The surveys were also completed in person so instructors had the opportunity to clarify questions if needed and it was observed that all instructors appeared to complete the survey thoughtfully and carefully. Furthermore, there appeared to be no contradictions between the

instructors' respective interview and survey responses. Therefore, no instructor interviews or surveys were removed for data cleaning purposes.

The observation notes were recorded by the primary researcher of this research project. However, during this pilot test an additional researcher¹⁹ observed one of the classes along with the primary researcher to check the accuracy of the primary researcher's observations. After the joint class observation, the observation notes from the primary researcher and additional researcher were compared. The two sets of observation notes were found to be relatively consistent. Therefore, the primary researcher's observations were deemed reasonable for the purpose of this study. Furthermore, they were inspected for errors before analysis, but no errors were found. Therefore, no observation notes were removed as a result of data cleaning.

4.4 PILOT TESTING RESULTS AND SUBSEQUENT INSTRUMENT MODIFICATIONS

The following subsections provide detailed information regarding the validity testing of instruments included in this study and the resulting modifications made based on the pilot test results. The modifications and the relevant justification for each modification are briefly summarized in Table 4.3.

¹⁹ The additional researcher was Dr Rosemary Kerr who was the co-supervisor on the thesis committee at the time.

Table 4.3 Summary of Instrument Modifications

Modification Made	Reason for Modification
Student Survey	
Items BI5, BF2, BF3, CI4 and AI6 were removed.	These items were identified due to a low correlation with the average of all engagement items. Observations and logical reasoning were used to decide if each individual item should be removed or altered.
Item BI6 (which asked about students' contributions to group discussion) was merged with item BI2 (which asked about students' contributions to class discussions).	
Item CI5 was removed.	This item was considered unnecessary and redundant with the inclusion of other CE items. It was removed to shorten the survey.
All engagement items were placed under one question stem and shuffled so items regarding AE, BE and CE were not in any discernible order.	An exploratory factor analysis showed a possible influence of common methods variance (CMV) when looking for the presence of AE, BE and CE in the data.
The qualitative question was changed to ask students to list three words describing their experience with the relevant ELA.	The previous version of the survey yielded no usable responses in the pilot test (likely because it was an optional question with no clear focus).
A series of engagement items were added to the survey (a singular engagement item and six items based on literature definitions of AE, BE and CE).	These items are broader and can therefore be applied to a wider range of activities.
	To investigate alternative options to measure student engagement using fewer items in the principle testing.
Minor format and wording changes (such as bolding question stems and writing all questions in full sentences).	These alterations follow elements of Dillman's Tailored Design Survey Methodology to improve the quality of student responses.
Instructor Survey	
Question regarding students taking notes was removed.	Remain consistent with student survey.
Question about how much students leave the room during the activity was added.	This behaviour was observed and added to the instructor interview to capture an additional indicator of engagement.
Question related to students' contributions to class was altered to include non-verbal indicators.	Observations and verbal feedback from instructors indicated many students legitimately contribute in this way.
Observation Templates	
Observation templates were merged into one template and duplicate questions were removed.	Improves the efficiency and effectiveness of note taking.
'Writing' removed as an indicator of engagement.	Remain consistent with student survey.
'Reading' removed as an indicator of engagement.	Observations showed reading was not a relevant indicator of engagement for most activities.
An option was added to classify a student's behaviour for individual engagement indicators as neutral.	Observations showed some students appeared neither engaged nor disengaged for some should indicators, and this be accurately reflected in the observation notes taken.
Instructor Interview and Student Focus Group Questions	
No modifications were made to these instruments as a result of this pilot.	

4.4.2 STUDENT SURVEY

Once the data was cleaned, descriptive statistics regarding demographic data in the student survey were produced to identify the sample's characteristics. There was a relatively even gender split in the sample with 52.5% male students. Furthermore, 77.9% of respondents indicated English was their first language and 84.4% of respondents indicated they were domestic students (15.6% international students). The percentages of domestic students and students with English as a first language are consistent with one another and with expectations since this is an Australian university with international connections. A large majority of respondents indicated they have no accounting work experience; 7.4% indicated they had up to four weeks of experience and 12.3% indicated over four weeks experience. Since the pilot testing sample was not targeted exclusively at accounting students, these results were consistent with expectations that not many of the respondents would have accounting work experience.

Descriptive statistics were also generated for all engagement items in the survey. All engagement items were Likert scale questions, which were coded from 1 (indicative of low engagement/disengagement) to 5 (indicative of high engagement). Table 4.4 presents the frequencies of responses on the 5-point Likert scale for each engagement item. All items, except CI1, included responses across the whole available 5-point scale. Therefore, it appears the spread in data would be sufficient to support analyses planned for principle testing.

Table 4.4 Frequency Table of Engagement Items

Item	1	2	3	4	5	Bar Graph
AF1 ^R	5	21	20	43	25	
AI1	3	10	30	49	22	
AI2	4	11	34	37	28	
AI3	2	26	37	28	21	
AI4	2	24	33	34	21	
AI5	4	30	36	28	16	
AI6 ^R	5	19	28	38	24	
BF1	1	14	35	47	17	
BF2	6	17	33	30	28	
BF3 ^R	14	22	36	30	12	
BI1	20	36	28	20	10	
BI2	12	19	37	28	18	
BI3	11	18	38	31	16	
BI4	1	6	18	45	44	
BI5	16	35	40	19	4	
BI6	5	5	24	42	38	
CI1	0	12	36	48	18	
CI2	2	16	36	49	11	
CI3	1	15	34	39	25	
CI4 ^R	2	30	50	28	4	
CI5	5	20	35	42	12	

R: These items have been reverse coded for future analysis so all items consistently use 1 to indicate low engagement/disengagement and 5 to indicate high engagement. Therefore, the frequencies provided in this chart show the reverse coded frequencies.

In an attempt to decrease the number of completed surveys removed during data cleaning for the principle testing, the survey was shortened and streamlined where possible. An average of all engagement items was calculated and each individual item's correlation with the average was assessed to identify items which could be considered for removal. This approach was adopted because it is theorized that all these items should come together to measure one thing: engagement. Therefore, if an item has low correlation with the average, it is potentially measuring something other than engagement. Six items with correlations below 0.5 were identified: AI6 (0.432), BI5 (0.333), BI6 (0.416), BF2 (0.402), BF3 (0.221) and CI4 (-0.142). These items were not simply removed based on this correlation analysis, each item was considered contextually and using logical reasoning to assess its effectiveness/appropriateness

before any changes were made. The following paragraphs detail the consideration of each of the above identified items.

The first identified item (AI6) asked students to agree/disagree that the learning goals were not relevant. In retrospect, the wording of this item may have slightly confused students because students may simply miss the word 'not' when reading quickly. Another item (AI4) in the student survey asked students to agree/disagree that they acquired/improved job-related skills or knowledge. If students believe they have acquired/improved job-related skills or knowledge from an activity, it would be reasonable to assume they believe the activity is relevant to them. Although the correlation between these items was not very high, it is possible this was because students did not properly read/understand AI6 due to the item's negative phrasing. Therefore, item AI6 about learning goal relevance was removed from the student survey to remove possible ambiguity or confusion.

The second item (BI5) asked students about writing notes. During class observations, it was noted that very few students recorded hand-written notes because most students use laptops in class. However, when instructors were completing the instructor survey, most of the instructors interpreted the equivalent question to only include hand-written notes. It is probable students interpreted this question in the same way. Furthermore, the sources for this item were published in 2005 when laptop use in class was less extensive, so this item may have become obsolete. Therefore, item BI5 asking students how frequently they wrote notes was removed from the student survey and subsequent analyses.

The next item (BI6) asked students how frequently they participated in group discussions. Another item in the student survey (BI2) asked how frequently they participated in class discussion. Both these items gathered information about participating in discussions, but in slightly different circumstances. Therefore, it was decided that BI2 would be altered to incorporate BI6 instead of removing BI6 completely. This would ensure both scenarios are still addressed, but in one item instead of two. BI2 now asked students how frequently they participated in class/group discussions.

The next two items identified (BF2 and BF3) regarded getting distracted. More specifically, the items asked students how frequently they do unrelated activities and go off topic in group discussions, respectively. Another item in the student survey (BF1) asked students to agree/disagree that they stayed focussed. This item asking about focus appears to indirectly encompass both BF2 and BF3 as well as other possible distractions that were not individually mentioned. Therefore, it was deemed acceptable to remove BF2 and BF3 to refine the questionnaire without missing a key aspect of engagement.

The last item identified (CI4) is the memorising question, which the literature suggests should be reverse coded for analysis because it is considered an indicator of disengagement. Therefore, the correlations between CE items were calculated with the CI4 reverse-coded to investigate this proposed nature of memorising (Table 4.5). The magnitude of correlations between CI4 and each of the other CE items were all noticeably lower than the correlations among the other four CE items. The correlations pertaining to CI4 were not statistically significant except for C11 which was only significant at the 5 percent level. Therefore, although the literature supports the use of CI4 as a negative indicator of engagement, the data from this pilot test did not support this.

Table 4.5 Cognitive Engagement Items Correlations

	C11 Analysing	C12 Evaluating	C13 Applying	C14 Memorising	C15 Synthesizing
C11	1.000	0.489**	0.441**	-0.233*	0.615**
C12	0.489**	1.000	0.526**	-0.111	0.632**
C13	0.441**	0.526**	1.000	0.001	0.458**
C14	-0.233*	-0.111	0.001	1.000	-0.190
C15	0.615**	0.632**	0.458**	-0.19	1.000

****** $P \leq 0.01$ (1-tailed)

***** $P \leq 0.05$ (1-tailed)

It is possible the negative coding of memorising is not the issue, but the relationship of memorising with engagement itself is an issue. It appears memorising is potentially neutral in many situations, making memorising neither an indicator of cognitive engagement nor disengagement. As previously explained, the cognitive engagement

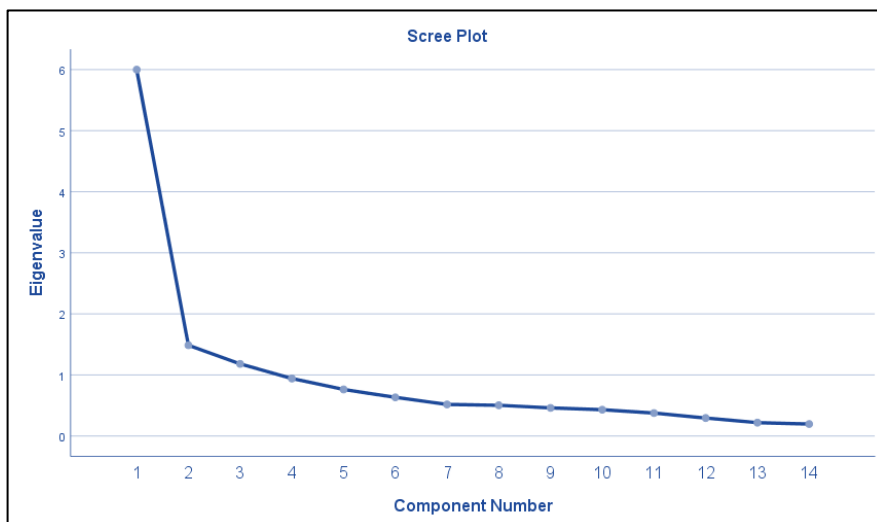
items were developed from Bloom's taxonomy, and is a hierarchy of cognitive skill levels. At a course level, it makes sense having emphasis on the lowest level of the hierarchy (memorising) would indicate students' disengagement. However, at an activity level this may not be true, as many activities will include an element of memorising without necessarily sacrificing the higher levels. For example, a student may have an accounting formula memorized and subsequently apply it when solving a problem in class. In order to apply the formula to the problem they must use higher-order thinking skills and be cognitively engaged, however having the formula memorised does not mean they engaged more or less with the problem. Therefore, item CI4 about memorising was removed from the survey and from further analysis.

Based on Table 4.5 above, item CI5 was also removed from the survey to shorten it where possible. Similar to memorising not being applicable to an activity the same way it is applicable to a course, it is likely the whole hierarchy is not needed to measure cognitive engagement at an activity level. CI5 was considered for removal because it is the mid-point of the hierarchy so is less likely to provide new information when the lower and higher levels are already measured. Furthermore, the keyword in CI5, synthesizing, seems to be the hardest for students to interpret or understand because it is not a very commonly used word.

Once these seven items were removed from the questionnaire, an exploratory factor analysis (EFA) was completed on the remaining engagement items within the student survey.²⁰ The relevant scree plot (Figure 4.4) shows a one-factor solution would be reasonable. Furthermore, a one-factor model would account for 42.9% of the variance. This supports the notion that these items all come together to measure a single concept; student engagement. However, since it is also a reasonable option based on the Scree plot, a three-factor model was also extracted to explore the engagement literature's suggestion that there are three types of engagement: AE, BE and CE.

²⁰ An EFA was deemed sufficient for the purpose of pilot testing the survey. A confirmatory factor analysis (CFA) will be completed for the principle testing.

Figure 4.4 EFA Scree Plot



The three-factor model cumulatively accounts for 61.9% of the variance and the relevant Varimax rotated component matrix can be seen in Table 4.6. The first column lists the item number, which can also be used to identify whether the item is classified as AE, BE or CE according to the literature. The last three columns list the factor loadings of each item onto each factor/component labelled according to engagement types. This matrix revealed all items except AI1, BI4 and BF1 loaded onto factors consistent with the literature and original categorizations of the items. Item AI1 asked if students made an effort, item BI4 asked if students listened carefully to the instructor and BF1 asked if students were focused and on task. Both items BI4 and BF1 were originally classified as BE because they are observable indicators of student engagement. However, being focused and listening carefully could also fit the definition of AE as it could be an indicator of how invested the student is in the task.

Table 4.6 EFA Rotated Component Matrix

Item	Component		
	AE	BE	CE
AI1	0.380	0.719	0.092
AI2	0.799	0.214	0.207
AI3	0.661	0.364	0.237
AI4	0.700	-0.003	0.127
AI5	0.767	0.082	0.040
AF1 ^R	0.757	0.303	0.259
BI1	0.065	0.834	0.192
BI2	0.153	0.833	0.192
BI3	0.314	0.470	0.232
BI4	0.628	0.267	0.167
BF1	0.537	0.376	0.035
CI1	0.406	0.198	0.638
CI2	0.152	0.222	0.791
CI3	0.079	0.125	0.830

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

R: Reverse coded item

Since the EFA yielded factors largely in line with the three types of engagement, discriminant validity between AE, BE and CE were investigated using both the Fornell-Larcker (Fornell & Larcker, 1981) and HTMT (Henseler, Ringle, & Sarstedt, 2015) approach. According to the Fornell-Larcker approach, discriminant validity is confirmed for a pair of factors if the squared correlation between the factors is less than the Average Variance Extracted (AVE) of both factors. Table 4.7 provides the squared correlations between each of the three factors with the AVE of each factor on the diagonal. According to Table 4.7, discriminant validity is confirmed for all pair combinations except AE/BE. According to the HTMT approach, discriminant validity is confirmed for a pair of factors if the geometric mean of correlations between items in different factors divided by the geometric mean of correlations between items within the same factor is less than 0.85. The HTMT pair ratios for AE-BE, AE-CE and BE-CE were 0.97, 0.69 and 0.79, respectively. Therefore, consistent with the Fornell-Larcker approach, the HTMT approach confirmed discriminant validity for all pair combinations except AE-BE.

Table 4.7 Fornell-Larcker discriminant validity (squared correlations with AVE on the diagonal)

	AE	BE	CE
AE	0.520		
BE	0.494	0.377	
CE	0.283	0.334	0.483

Overall, this three-factor model corresponds well with the underlying engagement theory. However, the three factor-model may be emerging as a result of common methods variance (CMV) because the survey predominantly grouped the three types of engagement under three separate question stems. The only exceptions to the question stem groupings were BI4 and BF1, which were BE items placed under the AE question stem. These two items were incorrectly identified as AE items in the EFA and made up two out of three items which did not load onto the correct factor. Therefore, the survey was subsequently modified to place all engagement items under one question stem and measured with a single Likert-scale from 1 (strongly disagree) to 5 (strongly agree) and the order of the items was shuffled, so the three types of engagement were mixed together. This three-factor model will be further explored in the principle testing when the potential CMV problem has been addressed.

Composite reliability and Cronbach's alpha were calculated as scale reliability tests.²¹ When interpreting Cronbach's alpha and composite reliability, a commonly accepted guideline is anything above 0.7 is acceptable and above 0.8 is preferable (Pallant, 2016). The Cronbach's alpha and composite reliability for the student engagement items in this student survey were 0.90 and 0.92, respectively. Therefore, the Cronbach's alpha and composite reliability for this survey supports the assertion that the student survey is internally consistent.

The student survey's external validity was checked by correlating the student survey engagement data with data from the other two perspectives: the observation notes and instructor survey. Before the engagement data could be compared between perspectives, an engagement score for each perspective had to be calculated and all three perspectives had to be collated.²² The following paragraphs explain how the

²¹ Table 4.6 provides a complete list of the engagement items included in the scale reliability testing.

²² The instructor and observer data was imported into the student survey data instead of averaging the student data down to a class level and instructor level. This choice was made because the student

engagement scores were calculated and collated in more detail, before completing and interpreting the correlations. Furthermore, Table 4.8 provides a small extract of engagement data to assist in understanding these explanations.

Table 4.8 Extract of Engagement Data from All Perspectives Collated

Participant ID	Class	Instructor	Engagement from Student Survey	Engagement from Observation Notes	Engagement from Instructor Survey
1	1	1	3.31	0.54	3.43
4	1	1	2.97	0.54	3.43
91	6	1	4.30	0.63	3.43
92	6	1	4.17	0.63	3.43
75	5	4	3.57	0.47	2.71
76	5	4	2.19	0.47	2.71
144	9	4	2.77	0.5	2.71
146	9	4	3.44	0.5	2.71

For the student survey, an engagement score was calculated by averaging all the engagement items in the student survey for each student (see Table 4.6 for a list of the engagement items). Therefore, a variable was added to each student containing that student's individual engagement score from the student survey. This is included in the fourth column of Table 4.8 above showing 8 individual student survey engagement scores.

For the observation notes, an observation engagement score was calculated for the class as a whole using two steps. First, the number of students classified as engaged was divided by the number of students observed under each indicator of engagement included in the observation notes to calculate the percentage of engaged students in the class for each indicator individually. Second, the percentage of engaged students for each indicator were averaged together to combine them into one observation engagement score for the class. Therefore, a variable containing the observation notes engagement (the average percentage of engaged students taking into account all indicators of engagement) was added to the student data. More specifically, all students in the same class will have a variable presenting the same observation engagement scores. This is included in column five of Table 4.8, which presents the

survey is the most prominent data source for subsequent analysis. It was decided to leave the most prominent data source in its original form and fit the other sources to the student data instead.

observation notes engagement scores for these students who are from 4 different classes (for example, the first two students are both from the class 1 and, therefore both have 0.54 recorded as the observation notes engagement score).

For the instructor survey, instructors completed one survey encompassing all the classes they taught within the scope of the study. By averaging their responses to all engagement items in the instructor survey, one engagement score was calculated for all an instructor's classes together. Therefore, a variable was added to each student's data, which contained the instructor survey engagement score depending on which instructor taught them. See column 4 in Table 4.8 above showing instructor survey engagement scores for these students who were taught by one of two different instructors (for example, the first four students were all taught by the same instructor and, therefore, all have 3.43 recorded as the instructor survey engagement score).

Once the engagement scores were calculated and collated, a correlation analysis was performed between the student survey engagement score and the other two perspectives. The correlation between student engagement from the student survey and the observation notes was 0.431 ($p = 0.000$). The correlation between student engagement from the student survey and the instructor survey was 0.311 ($p = 0.001$). These correlations were not expected to be equal or close to 1 since the observer and instructor perspectives measure engagement for the class as a whole, whereas the student perspective measures engagement for each student individually. Furthermore, a large part of engagement is internal and therefore, cannot be observed externally and can only be reported through the self-assessment from the student survey. However, despite these limitations, the correlations between the student perspective and the other perspectives were positive and highly significant. Therefore, these correlations were in line with expectations and as such provide evidence of the student survey's external validity. Additionally, it is noted these results and conclusions are consistent when the analysis is completed including the previously excluded class 2.

The last item in the survey yielded no usable responses in the pilot testing. This item was an optional open ended question asking students if they had any additional comments regarding the activity. Most respondents did not write anything and those who did write something did not include useful information. For example, some respondents drew a smiley face and some students broadly commented on liking their

instructor. Therefore, the item was changed to ask students to list three words describing their experience with the learning activity. This could yield more responses as it is no longer an optional question. Additionally, the responses will likely be better quality as the new item is substantially more focused.

An additional series of engagement items was added to the survey (Table 4.9). These items are made up of a singular engagement item and six items based on the definitions of AE, BE and CE. They are presented to students as a 5-point Likert-scale with a positive and negative label on each end (as shown in Table 4.9). The labelling convention used for these items are consistent with the existing items; the first letter A, B, or C indicates whether it is measuring AE, BE or CE respectively, and E is used for the single item measuring overall engagement. The second letter is T as these items were derived from theory and a number is added to make the label unique.

Table 4.9 Additional engagement items

Item	On a scale of 1 – 5, during this activity I...						
ET1	was very disengaged	1	2	3	4	5	was very engaged
AT1	thought the activity held very little value	1	2	3	4	5	thought the activity held a lot of value
AT2	was very disinterested	1	2	3	4	5	was very interested
AT3	was very uninvested in the activity	1	2	3	4	5	was very invested in the activity
BT1	was very inactive	1	2	3	4	5	was very actively involved
BT2	was very distracted	1	2	3	4	5	was very attentive
CT1	used very little mental effort.	1	2	3	4	5	used a lot of mental effort

These new items (Table 4.9) were added to the survey for two reasons. First, the questions based on past instruments are very focused and specific, whereas items developed from the foundational ideas of AE, BE and CE can be broad enough to apply to a very wide range of activities. Second, the scale based on past instruments is very large and these items were added to investigate an alternative option to measure engagement using fewer items, including a single item (ET1) measuring overall engagement or a few items measuring AE, BE and CE.

Lastly, the format of the survey was altered with reference to elements of Dillman’s Tailored Design Survey Methodology (Dillman, 1982). This predominantly involved

format changes such as bolding the question stems and indenting the answer stems. It also involved a few minor word changes to items. For example, the item asking about gender was changed from “Your gender” to “What is your gender” because the methodology suggests all survey questions should be written in full sentences. These format changes were made to improve the quality of responses received from students. Refer to Table 1.1 Appendix 8: for the draft student survey after pilot testing modifications were applied.

4.4.3 INSTRUCTOR INTERVIEW QUESTIONS AND SURVEY

The first two interview questions asked instructors to identify indicators of engagement and disengagement for two purposes. The first purpose was to get a feel for the instructor’s understanding of engagement. The results of this question confirmed that instructors’ ideas of engagement were in line with the study’s definitions of engagement. The second purpose was to identify any additional indicators to be included in the subsequent instructor survey. During this pilot testing, no new indicators were identified for inclusion in the instructor survey, but if any were identified they would have been easily added to the instructor survey. Since the purpose of these questions was fulfilled, the first two questions of the instructor interview remained unchanged

The third and final question in the interview asked instructors about their personal views regarding ELAs in general. Most instructors believed ELAs were good if used in combination with Traditional Learning Activities (TLAs). However, one instructor expressed ELAs were better than TLAs without stating any conditions. When the principle testing is performed with the intent of making conclusions, this kind of qualitative data may be useful to explain some regression results. Therefore, this question also remained unchanged in the instructor interview.

The purpose of the first section in the instructor survey is to collect engagement data that can be used to corroborate the engagement data collected from the student survey. Therefore, when the item regarding taking notes was removed from the student survey²³, it was removed from the instructor survey as well. The second change in this section was adding an item asking how many students left the room during the activity.

²³ As previously detailed, this item was removed from the student survey because it was not correlating well with the overall engagement score and participants appeared to be confused by it.

This inclusion was a result of some students being observed leaving the class and returning later, which may show disengagement. The last change in this section was a modification to the item about students' contributions to class discussions. Based on observation and verbal feedback with the instructors, it was noted that some students contribute non-verbally by nodding/shaking their heads or raising their hands in response to questions etc. Therefore, extra information was added to this item in all instruments to stipulate it includes verbal and non-verbal actions.

The second and final section of the instructor survey collected data on the instructor's attitude to the particular ELA using a number of Likert-scale items. Based on verbal feedback from instructors none of these questions were unclear or ambiguous. Therefore, no changes were made to this section of the instructor survey. Table 1.1Appendix 9: provides the final version of the instructor survey after the above changes were made.

4.4.4 THIRD PARTY OBSERVATION TEMPLATES

The first change to the observation notes was merging the two templates into one. This change was made to improve the efficiency and effectiveness of the note taking. It was noted having the two templates resulted in some repetition. For example, a question in the engagement observation notes recorded information on the instructional methods while the same information was recorded in the delivery observation notes under the question "order of delivery" and "how the activity was introduced". Therefore, when the two templates were merged, questions repeated across the templates were removed.

Two indicators were removed to improve the quality of the engagement notes recorded. The first indicator removed was "writing" to remain consistent with the student survey and instructor survey. The second indicator removed was "reading" because it was noted students are not required to read material for many ELAs.

Lastly, a column was added to the engagement notes section to allow the observer to record neutral behaviour. An example of neutral behaviour is when a student has a computer open in front of them with content relevant to the activity open or no content open, but is not really interacting with it. This student is neither engaged, disengaged nor not applicable for the engagement indicator "computer use". Table 1.1Appendix 10: provides the final version of the observation notes template after the above changes were made.

4.4.5 STUDENT FOCUS GROUP QUESTIONS

No student focus group data was collected because no students volunteered to participate in a focus group despite the incentives on offer. Therefore, the focus group questions remain unchanged, but the strategy to invite students to participate will be changed slightly. For subsequent testing, a poster will be put on the projector instead of a paper poster. Furthermore, students will be told about the focus group three times instead of one: at the beginning of the class, just before the survey is handed out and while students are completing the survey.

4.5 PRE-TESTING

The objective of this pre-test was to get more detailed feedback from students about the survey format and clarity of items by asking them verbal questions about the survey. Fewer students were included in the pre-test and only the student survey was tested. This type of pre-testing was completed formally at this stage of the project because of the extensive changes to item wordings and survey format resulting from the pilot test. The following sections provide details regarding the pre-test sample and results.

4.5.1 SAMPLE

The sample of this pre-test consisted of 10 university students selected through convenience sampling. Students were chosen haphazardly²⁴ and asked to complete the survey based on a recent classroom experience before verbally answering a few questions about the survey. Pre-testing stopped after 10 students because it appeared data saturation had been achieved from students' verbal feedback.

4.5.2 PRE-TESTING RESULTS AND SUBSEQUENT SURVEY MODIFICATIONS

The first item discussed with students was their preference between two Likert-scales for the main section of engagement items: a five-point Likert-scale from strongly disagree to strongly agree or a five-point Likert-scale from never to almost always (Figure 4.5). These two Likert-scales were each used for one of the question stems in the first version of the survey, but this version combined the items under one question

²⁴ Students were chosen without pattern whilst trying to include a range of different students. For example, the students included young and mature age students as well as students with English as a first language and students with English as an additional language.

stem. Therefore, a choice had to be made regarding which question stem to use going forward.

Figure 4.5 Q3 Scale Options

Please show how much you agree/disagree with the statements below by circling the best response. (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)					
During this learning activity I...					
Asked questions when I didn't understand the instructor	1	2	3	4	5
Please indicate how much you did each of the following things by circling the best response. (1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Frequently; 5 = Almost always)					
During this learning activity I...					
Asked questions when I didn't understand the instructor	1	2	3	4	5

Half the students were given the survey with the agree/disagree Likert-scale, while the other half were given the question with the frequency Likert-scale. After completing the survey, students were shown the alternative scale and asked which they prefer. 60% of students indicated the agree/disagree Likert-scale was clearer and easier to answer. The scale used when initially completing the survey did not have any discernible effect on which scale students indicated a preference for. This data supports a decision to use the agree/disagree Likert-scale, but this alone is not compelling evidence and this choice was further considered as detailed in the next paragraph.

Students' potential responses to situational questions, such as BI1 depicted Figure 4.5, were also considered when making this decision. There was a concern that results from situational questions such as this one could not be accurately interpreted when students were simply not in that situation. Therefore, to investigate this concern and determine which scale minimises its consequences, students were asked what response they would give to item BI1 using each of the scales if they did not have any questions. Using the frequency Likert-scale, students' responses were very wide-ranging with 70% of students indicating the extreme responses of 1 or 5. The remaining three students indicated they would respond with a 4, would leave it blank or would answer it based on a different experience. On the other hand, using the agree/disagree Likert-scale, 70% of students indicated they would select the neutral option of 3 with the remaining students indicating a potential response of 5. Student feedback on this type of question supports the concern about situational questions under both Likert-scales. However, this item was not removed despite concerns because all the foundational instruments support this indicator of engagement. Furthermore, without

being directly asked about it, many students strongly asserted it is very unlikely for them to encounter a situation where they have no questions. In conclusion, the agree/disagree Likert-scale yields slightly more consistent and less extreme responses and, therefore, the survey was modified to use an agree/disagree Likert-scale for the main block of engagement items in the survey.

Students were then asked about the clarity and flow of questions and definitions in the survey. All students indicated they understood and would be able to identify a case study and a live case based on the definitions provided even when they did not know these terms previously. All students also indicated there were no questions they were unsure of and all questions were clear. Therefore, no survey modifications were necessary to respond to this feedback.

Students were asked if any of the survey felt repetitive. There was a concern students would start disengaging from the survey and give illegitimate responses, if students perceived it to be repetitive. Students identified AI2 and AF1 as being somewhat repetitive. These questions ask if the student was interested (AI2) and bored (AF1), which is an intentional paired question to test for internal validity within the survey. Nevertheless, students who identified this pair of questions strongly asserted that the survey was not repetitive overall. Therefore, no survey modifications were made to respond to this feedback.

Lastly, students were given an opportunity to provide any other comments they may have with regards to improving the survey. Most students did not have any further comments. However, two students indicated that the item asking about gender should not force people to select between male and female. Therefore, the gender item was modified to include the additional response option "I prefer not to answer".

Refer to Table 1.1 Appendix 11: for the final version of the survey instrument after modifications were made based on the pre-testing.

4.6 SUMMARY

This chapter details the initial development, pilot testing and pre-testing with resulting modifications to engagement instruments highlighted. The engagement instruments covered in this chapter are a student survey, observation notes, instructor interview,

instructor survey and student focus group. The final versions of these instruments to be used for the principle testing of student engagement from a single ELA can be found in Table 1.1Appendix 11:, Table 1.1Appendix 10:, Table 1.1Appendix 5:, Table 1.1Appendix 9: and Table 1.1Appendix 7:. The next chapter presents the methods, results and discussion of the final round of data collection using these instruments.

CHAPTER 5: PHASE 1 (POST-ELA ENGAGEMENT ASSESSMENT) – PRINCIPLE TESTING RESULTS AND DISCUSSION

5.1 OVERVIEW

The final post-ELA instruments described in the Chapter 4 were used to assess student engagement from four learning activities within two different courses. Both courses are core third-year courses for an accounting major. The first course provides training in the use of MS Excel and Tableau Desktop for various accounting applications. The second course provides students with advanced knowledge of corporate transactions and business combinations. The ELAs assessed in Course 1 will be referred to as ELA 1.1 and ELA 1.2 and the ELAs assessed in course 2 will be referred to as ELA 2.1 and ELA 2.2. This chapter details the sample (Section 5.2 and 5.3), data cleaning (Section 5.4) and statistical methods (Section 5.5) used during principle testing. Then, the results are explored and presented followed by a discussion of the results (Sections 5.6 to 5.10).

5.2 SAMPLE

This section describes the sample in terms of students and instructors in each of the below subsections, respectively.

5.2.1 STUDENTS APPROACHED TO PARTICIPATE

A total of 370 questionnaires were distributed to students, 47% and 53% of which were in Course 1 and Course 2, respectively. The distribution between activities was also relatively even with 25%, 28%, 25% and 22% of responses recorded for each of the four ELAs. The questionnaires were distributed to all students physically present in the classes and students then decided whether or not they wanted to participate (response rates are discussed in section 5.4.1 below).

The student sample information above refers to the number of questionnaires distributed, not the number of students invited to participate. The total number of students who participated in the study is unknown because most students would have been invited to respond for this study at least twice. This is an unfortunate practical issue resulting from the fact two ELAs were tested in each course and both courses are

third-year courses in the same degree, so some students may be taking both courses. Students completed the survey anonymously, which means the researcher cannot identify how many times each student completed the survey across all four ELAs in total. Students were asked if they had completed the survey before as part of the survey to make sure this did not significantly affect their responses (a control variable representing this question was included in a regression analysis in section 5.8).

5.2.2 INSTRUCTORS

All instructors approached for the study agreed to participate in the instructor interview and survey. The instructor sample consisted of five instructors in total; two instructors in Course 1 and three instructors in Course 2. Furthermore, one of the instructors in each course was the course coordinator of that course.

5.3 ELA DESCRIPTIONS

ELA 1.1 is a fictitious case study. It gives a lot of background information and requires students to complete tasks that are complex but do not require much judgement to be made by the student. Students learn about using Scenario Manager in MS Excel to analyse capital budgeting investment decision-making. The activity was presented to students as an in-class activity, which did not count towards students' final grades.

ELA1.2 is a live case since the information is about the current financial data of Hershey Inc., which is a real company. Since the case company is real, the background information provided to students is extensive and relatively complex. The tasks that are required of students are open-ended and require creativity and personal judgements from the students. The activity teaches students about analysing company data in Tableau Desktop. It was set as an assignment for marks, but students worked on the assignment in class.

ELA2.1, is a fictitious case study. It gives minimal background information and directly asks students to complete numerical tasks that require little or no judgement to be made by the student. It is used to teach the concept of consolidations with wholly owned entities. The activity was conducted as an in-class exercise, which did not contribute to students' final grades.

ELA2.2 is a case study, but it is a recognizable and real scenario (not fictitious). It provides extremely detailed background of the company and the specific scenario relevant to the ELA. Students are required to answer open-ended questions, which are designed to compel them to make decisions and judgements. It is used to teach students about corporate governance. This activity was run as an in-class activity, which was not marked.

5.4 DATA CLEANING

This section details the data cleaning performed for the student data and then all other data in the two subsections below.

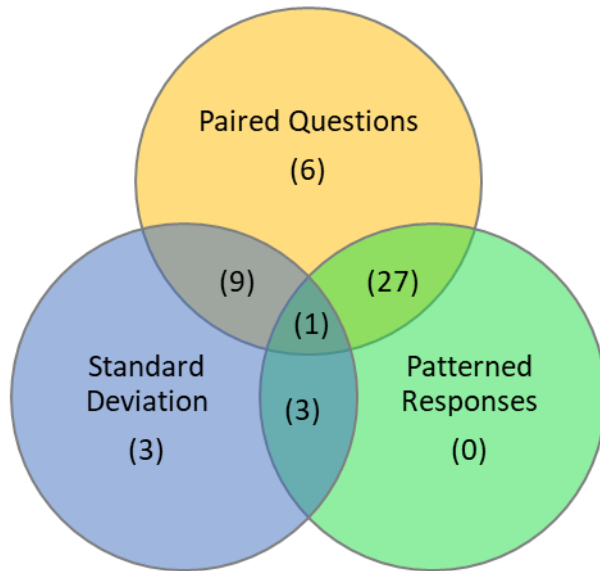
5.4.1 STUDENT SURVEY DATA

A total of 351 survey responses were collected from students, which gave an initial response rate of 95%. However, 77 respondents were removed during data cleaning resulting in a usable response rate of 74%. As previously explained in Chapter 4 (Section 4.3.2), the high initial response rate and large portion of surveys removed during data collection is likely due to the fact students were given a small chocolate to participate whether or not they completed the survey appropriately. The remainder of this subsection details the data cleaning performed for this dataset. For the purpose of consistency, the data cleaning process for this dataset was predominately consistent with data cleaning performed in the pilot testing. Refer to Chapter 4 (Section 4.3.2) for additional details and explanations of specific terms used in relation to the data cleaning.

The first phase of data cleaning was to evaluate the quality of individual survey responses. 28 respondents were excluded based on missing/unusable responses. This included questionnaires where respondents did not complete an important question (21), gave an invalid response to an important question (4) or both (3). 49 respondents were excluded due to inappropriately/illogically completing the survey. This included respondents removed due to low standard deviations in their responses, illogical paired question responses and patterned responses. Figure 5.1 presents a Venn diagram detailing the number of respondents removed due to each of these reasons, or combination of reasons. Many of these respondents were removed for more than one reason because questionnaires identified with each of these three methods individually could be legitimate responses (consistently with pilot testing methods). For example, a

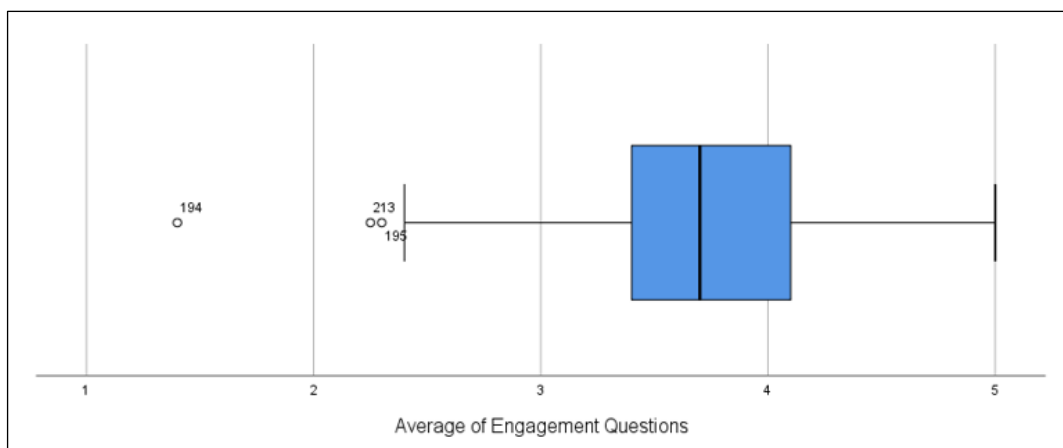
pattern in a survey's responses identified upon inspection may be coincidental and contain valid student engagement data. Additionally, in all cases, the physical questionnaires were checked before removal to ensure respondents were not removed based on a clerical error during data entry.

Figure 5.1 Venn Diagram of Inappropriately Completed Questionnaires



The second phase of data cleaning was to evaluate the responses as a group by checking for outliers. An average of all the engagement question responses was calculated for each questionnaire. This was then plotted on a box plot to identify any outliers (Figure 5.2). Three respondents were identified as outliers on the box plot. These respondents' questionnaires were investigated closely to determine the legitimacy of the responses and no cause was found to reject their responses. Therefore, these outliers were not excluded from the study.

Figure 5.2 Box Plot of Students' Average Engagement



The percentage of responses removed during data cleaning in this dataset was noticeably less when compared to the pilot testing (22% and 31%, respectively) whereas the percentage of returned questionnaires remained similar (94% and 95%, respectively). This improvement in the quality of responses received is likely due to changes made after the pilot test for this intended purpose. First, in the last series of modifications, the questionnaire was shortened to reduce survey fatigue. Second, the format of the questionnaire was changed from three blocks of questions to one block, which made the questionnaire appear shorter and simpler to complete. Thirdly, wording and format changes were made in line with elements of Dillman's Tailored Survey Design Methodology to improve the quality of survey responses. Lastly, participants received a chocolate with the questionnaire instead of after because, according to Dillman's Tailored Survey Design Methodology, this improves respondents' sense of responsibility to complete the survey appropriately.

5.4.2 ALL OTHER DATA

Similarly to pilot testing, the quality of data from the instructor interviews, instructor surveys, observation notes and focus groups were critically evaluated. This evaluation did not identify any incomplete or seemingly illegitimate data. Therefore, no other data was removed from the study as a result of the data cleaning processes.

5.5 STATISTICAL METHODS

The below subsections detail the statistical methods used to calculate an engagement score, validate the survey, quantitative testing and qualitative testing, respectively.

5.5.1 CALCULATING AN ENGAGEMENT SCORE

Subsequent analyses require all engagement items to be combined into an engagement score to act as the dependent variable, but items can be combined in three ways: mean, factor score and median. Table 5.1 presents the correlations between each of these three options, which range between 0.884 and 0.998. The factor score and mean are extremely similar, but the mean was chosen over the factor score because the mean has previously been used when measuring engagement in the literature (Ahlfeldt et al., 2005). The mean was also chosen over the median because it

likely retains more of the variation from the individual item responses²⁵. The risk involved in retaining this level of detail when combining the items is that outliers will disproportionately influence the measure of central tendency. However, in this situation that risk is low because the item responses being combined only range between 1 and 5. Therefore, it would be more suitable for subsequent analyses, such as multiple regression, to use the mean. This engagement score (the mean of all engagement items) will now be abbreviated to *SES* (Student Engagement Score). The dependent variable will be *SES* in all subsequent analyses in this phase of the thesis study unless specified otherwise.

Table 5.1 Engagement Score Correlations

	Mean	Factor Score	Median
Mean	1	.998	.884
Factor Score	.998	1	.884
Median	.884	.884	1

5.5.2 SURVEY VALIDATION

Confirmatory factor analysis (CFA), using AMOS, was used to assess a model for engagement with Affective, Behavioural and Cognitive Engagement (AE, BE and CE) as latent variables to follow up on discriminant validity concerns raised in the pilot test. As detailed in Chapter 4 (Section 4.4.2), the pilot test Exploratory Factor Analysis (EFA) results revealed the three types of engagement described in the literature; AE, BE and CE; were also evident in the survey data. However, it was noted Common Method Variances (CMV) may have influenced these results. Therefore, since these items were shuffled together in the final student survey, a CFA was used to determine if the three types of engagement are present in the data or if CMV was likely responsible.

²⁵ For example, consider a scenario where there are 10 items being combined and three students respond as follows:

3, 3, 3, 3, 3, 3, 3, 3, 3, 3 (mean = 3.0; median = 3)

5, 3, 3, 4, 4, 3, 3, 3, 3, 5 (mean = 3.6; median = 3)

3, 1, 3, 4, 3, 2, 3, 3, 2, 3 (mean = 2.7; median = 3)

For the students above, the median remains the same for all three students, but the mean ranges from 2.7 to 3.6.

Discriminant validity between AE, BE and CE was also assessed directly using both the Fornell-Larcker (Fornell & Larcker, 1981) and HTMT (Henseler et al., 2015) approaches. The Fornell-Larcker approach is a well-established method that has traditionally been one of the most dominantly used methods to assess discriminant validity. In basic terms, the Fornell-Larcker approach compares the Average Variance Extracted (AVE) for each construct with the correlations between the constructs. For a pair of constructs, discriminant validity is confirmed if the correlation between the constructs squared is less than the AVE of both constructs. The HTMT approach is a newer method which claims to be more accurate at detecting discriminant validity in some circumstances. In basic terms, the HTMT approach calculates a ratio (Figure 5.3), which compares the correlations of questions within individual constructs and questions between constructs. For a pair of constructs, discriminant validity is confirmed if the ratio is less than 0.85 because this shows questions correlate significantly more when they are in the same construct than if they are in different constructs.

Figure 5.3 HTMT Ratio (Simplified)

$\text{Ratio} = \frac{\text{Average correlation of questions between construct A and B}}{\sqrt{(\text{Average correlation of questions in A} \times \text{Average correlation of questions in B})}}$
--

The discriminant validity analysis and CFA described in the above paragraph excluded the additional engagement items based on theory (Table 4.9) because they were added to the survey after pilot testing and were therefore not included in the EFA which originally raised discriminant validity concerns. Additionally, these new items were measured under a separate question stem with different available responses, which could also introduce common method variance if included.

Exploratory factor analyses, extracting different numbers of factors, were also completed to investigate other potential dimensions of engagement. Consistent with the above described CFA and discriminant validity analysis, this EFA is only performed for the items based on past instruments. However, an additional factor analysis, extracting one factor, was completed using all engagement items to determine if it is reasonable to combine all these items to measure one idea; engagement.

Internal consistency was assessed using Cronbach's alpha and composite reliability, consistent with the pilot testing methods. Both generally accepted benchmarks and pilot test results were used to assess the Cronbach's alpha and composite reliability achieved in the final testing. Lastly, the external validity of the student survey was assessed using the observation notes and instructor survey, consistent with pilot testing.

Face validity of the survey responses was also investigated using responses to a qualitative question included in the questionnaire asking students to provide three words to describe their experience with the activity. Two variables were created to record whether or not each student responded using the most commonly written positive and negative words ('interesting' and 'boring'). For each word, differences in the average engagement between students who did and did not write the word were tested with two sample t-tests.

5.5.3 QUANTITATIVE TESTING METHODS

Quantitative testing was used for two different purposes during this stage of the study: exploring relationships between engagement and several demographic/control variables, and comparing different scales to measure engagement. The methods used for both these analyses are detailed in this subsection.

The relationships between engagement and demographic/control variables were investigated using a forward stepwise regression approach, whereby Student Engagement Score (*SES*) is the dependent variable and the demographics/control variables are the independent variables. A forward stepwise regression describes a multiple regression analysis where independent variables are inserted into a final regression equation one-by-one based on which independent variable is the most significant in each step. This type of analysis allowed each variable's relationship with engagement to be analysed both individually and collectively because each variable is first analysed in isolation before being placed in a regression equation with other independent variables. Furthermore, forward stepwise regression is better than a straightforward multiple regression when some independent variables may be correlated, which is the case in this analysis²⁶. Table 5.2 lists the demographic/control

²⁶ Further details about the relationships between demographic variables will be provided in Section 5.8.

variables included in this forward stepwise regression analysis, including the label to be subsequently used when referring to the variable, the associated hypothesis if applicable (or a 'C' to show it is a control variable), a description of the variable and how the variable is coded.

Table 5.2 Demographic and Control Variables for Forward Stepwise Regression Analysis

Label	Description	Coding
Work experience (H1)	Does the participant have accounting work experience	0 = No accounting work experience 1 = Has accounting work experience
Male (H2)	The participant's gender	0 = female or preferred not to answer (only 3 participants did not indicate their gender) 1 = male
EAL (H3)	Does the respondent has English as an additional or first language	0 = English as a first language (EFL) 1 = English as an additional language (EAL)
ELA experience (H4)	How much experience the respondent has with ELAs at a university level	A numerical scale from 1 to 5 where 1 is Never and 5 is almost every class (calculated by averaging responses to questions about live case and case study experience on the same scale provided in the final column)
International (H5)	Is the respondent is enrolled as an international or domestic student	0 = domestic 1 = international
Real case (H6)	Was the information provided for the activity real or fictional	0 = fictional case 1 = real case
Live case (H6 & H11)	Was the ELA participated in was a live case or case study	0 = case study 1 = live case
Previously completed (C)	Did the participant previously complete the survey or not	0 = has not previously completed the survey 1 = has previously completed the survey
Course (C)	Is the respondent in course 1 or course 2	1 = course 1 2 = course 2 (details provided in Section 5.1)
Class (C)	Which class did the respondent attend	A unique code is given to each class made up of a number (1-9) according the order they were observed followed by a letter (a or b) indicating if it was the first or second time the class was observed.
Morning class (C)	Was the class scheduled during the morning, afternoon or night (in this data there were no evening classes so the variable was only coded between morning or not morning)	0 = afternoon class (finish between 11am and 4pm) 1 = morning class (finish before 11am)
Instructor (C)	Which instructor taught the participant	A unique number (1-5) is assigned to each instructor to protect anonymity.
Course coordinator (C)	Was the instructor the course coordinator for that course	0 = Not the course coordinator 1 = Was the course coordinator
ELA (C)	Which ELA did the respondent participate in	1.1 = ELA 1 in Course 1 1.2 = ELA 2 in Course 1 2.1 = ELA 1 in Course 2 2.2 = ELA 2 in Course 2 (details provided in Section 5.3)

The results from the forward stepwise regression are used to provide evidence for Research Question 1 and Research Question 2 through the associated hypotheses. These research questions and hypotheses have been explained and justified in Chapter 3. However, a list of the hypotheses relevant to Phase 1 is provided in Table 5.3 below.

Table 5.3 Research Question One and Two with Associated Hypotheses

Hypothesis Number	Hypothesis Description
Research Question 1 <i>(What student characteristics can influence student engagement from ELAs?)</i>	
H1	There is an association between a student’s engagement from an ELA and the extent of accounting work experience the student has.
H2	There is an association between a student’s engagement from an ELA and the student’s gender.
H3	There is an association between a student’s engagement from an ELA and the student’s first language.
H4	There is an association between a student’s engagement from an ELA and the extent which the student has already experienced that ELA.
H5	There is an association between a student’s engagement from an ELA and whether the student is international or domestic.
Research Question 2 <i>(What ELA characteristics can influence student engagement from ELAs?)</i>	
H6	There is a positive association between the authenticity of an ELA and student engagement with the ELA
H11	There is a positive association between an ELA being current and student engagement with the ELA

The second quantitative analyses performed in this stage of the project compared several engagement scales, which are detailed in Table 5.4. First, the scales were assessed by comparing how much variance is captured by each scale compared to ALL, while taking into account how many less items are used in the scale. Second, the scales were assessed by performing the same forward stepwise regression analysis described above for each scale option and comparing the results to the results achieved by ALL.

Table 5.4 Engagement Scale Options

Full Name	Number of Items	Label	Description
All Items	21	ALL	Consists of all engagement items in the survey, which encompass the <i>I14</i> , <i>T6</i> and <i>S</i> scales.
Instrument14	14	I14	Consists of all items developed and carried through from the pilot testing stage (<i>A11</i> , <i>A12</i> , <i>A13</i> , <i>A14</i> , <i>A15</i> , <i>AF1</i> , <i>B11</i> , <i>B12</i> , <i>B13</i> , <i>B14</i> , <i>BF1</i> , <i>CI1</i> , <i>CI2</i> and <i>CI3</i>).
Instrument6	6	I6	Consists of items <i>A11</i> , <i>A12</i> , <i>B12</i> , <i>B14</i> , <i>CI1</i> and <i>CI2</i> , which is a subset of the <i>I14</i> scale.
Theory6	6	T6	Consists of all items developed from the theoretical definitions of AE, BE and CE (<i>AT1</i> , <i>AT2</i> , <i>AT3</i> , <i>BT1</i> , <i>BT2</i> , <i>CT1</i>).
Instrument3 and Singular Item	4	I3S	Consists of the <i>I3</i> and <i>S</i> scales put together.
Theory3 and Singular Item	4	T3S	Consists of the <i>T3</i> and <i>S</i> scales put together.
Instrument3	3	I3	Consists of items <i>A12</i> , <i>B14</i> and <i>CI2</i> , which is a subset of the <i>I14</i> scale.
Theory3	3	T3	Consists of items <i>AT2</i> , <i>BT1</i> and <i>CT1</i> , which is a subset of the <i>T6</i> scale.
Singular Item	1	S	Consists of one item (<i>ET1</i>) asking directly about engagement.

5.5.4 QUALITATIVE TESTING METHODS

The purpose of the qualitative testing is to further investigate the quantitative results achieved in the forward stepwise regression equation. More specifically, the aim is to attempt to explain why the significant variables uncovered in the forward stepwise regression equation predict student engagement. For example, if International is identified as a predictor for SES, the qualitative analysis will explore what about international students make them more or less engaged. This will be done through the visual inspection of word clouds. Two word clouds for each significant variable will be created. Returning to the example of International, one word cloud would be created using words written by international students and another word cloud created from words written by domestic students. The two word clouds will then be visually compared and contrasted to identify trends or themes which may explain the regression results.

5.6 DESCRIPTIVE STATISTICS FROM THE POST ELA SURVEY

The first set of descriptive statistics is in relation to the engagement items, which are averaged together to calculate the primary dependent variable, *SES*. All 21 items included responses across all the available 5 points on the Likert-scale except for three items which included responses across four points (Table 5.5). For most items the responses are concentrated on points three, four and five. This is consistent with these activities being ELAs, which are expected to be engaging. Additionally, Figure 5.4 presents a histogram of *SES* results. Although, Likert question results are not strictly expected to have a normal distribution, averaging all engagement questions to calculate *SES* has resulted in a distribution for *SES* which resembled normal.

Table 5.5 Engagement items response summary

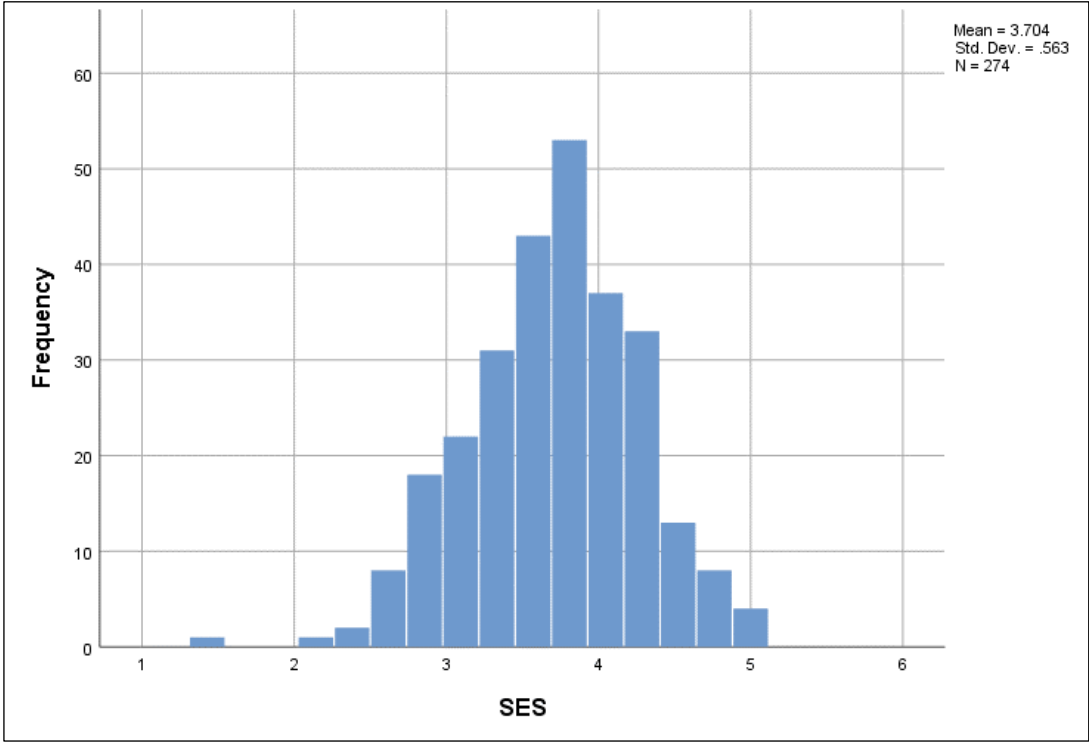
Item	Item Wording in Questionnaire	Responses on Likert-Scale				
		1	2	3	4	5
ET1	Was very engaged ^a	2	10	82	122	58
AT1	Thought the activity held a lot of value ^a	0	10	47	130	87
AT2	Was very interested ^a	2	13	69	138	52
AT3	Was very invested in the activity ^a	1	16	88	121	48
AI1	Made an effort	1	14	59	138	62
AI2	Was interested	1	17	87	110	59
AI3	Had fun	4	32	110	91	37
AI4	Acquired/improved job related knowledge and skills	10	20	72	109	63
AI5	Was challenged to do my best work	3	31	95	112	33
AF1	Was bored and unstimulated ^R	3	25	80	110	56
BT1	Was very actively involved ^a	3	29	89	107	46
BT2	Was very attentive ^a	2	21	79	122	50
BI1	Ask questions when you didn't understand the instructor	23	39	83	85	44
BI2	Contribute to a class/group discussion	4	30	83	108	49
BI3	Help fellow students	21	35	80	90	48
BI4	Listened carefully to the instructor when he/she was talking	0	9	51	137	77
BF1	Was focused and on task	5	23	81	115	50
CT1	Used a lot of mental effort ^a	6	18	93	100	57
CI1	Analysing ^b	0	15	73	144	42
CI2	Evaluating ^b	2	18	95	114	45
CI3	Applying ^b	3	14	63	137	57

a: Only the positive extreme of the Likert-scale for each of these items is provided in the table.

b: These items represent levels in Bloom's taxonomy. See Table 1.1Appendix 11: for the full description provided to students.

R: This item has been reverse coded here and for all subsequent analyses

Figure 5.4 SES Histogram



The second set of descriptive statistics is in relation to the demographic/control variables which will be used in subsequent regression analyses. Table 5.6 provides an overview of the basic descriptive statistics for each of the demographic/control variables. The table shows the proportion of students which fall under each category where relevant and the average *SES* of students in each category. These variables will be further explored in Section 5.8 below.

Table 5.6 Demographic/Control Variables Descriptive Statistics

Variable	Category	Proportion	Average SES
Work experience (H1)	Work experience	50%	3.781
	No work experience	50%	3.630
Male (H2)	Male	38%	3.631
	Female/No answer	62%	3.742
EAL (H3)	EAL	61%	3.829
	EFL	39%	3.508
ELA experience (H4) ^N	1 – Never	3%	3.442
	2	11%	3.571
	3	51%	3.680
	4	34%	3.781
	5 – Almost every class	1%	4.179
International (H5)	Domestic	43%	3.523
	International	57%	3.843
Real case (H6)	Real case	42%	3.737
	Fictional case	58%	3.679
Live case (H6 & H11)	Case study	80%	3.648
	Live case	20%	3.930
Previously completed survey (C)	Previously completed	38%	3.725
	Not completed	62%	3.684
Course (C)	Course 1	48%	3.836
	Course 2	52%	3.582
Class (C)	Class 1	5%	3.722
	Class 2	13%	3.659
	Class 3	16%	3.909
	Class 4	14%	3.960
	Class 5	8%	3.646
	Class 6	13%	3.545
	Class 7	11%	3.571
	Class 8	10%	3.553
	Class 9	11%	3.622
Morning class (C)	Morning class	39%	3.677
	Afternoon class	61%	3.745
Instructor (C)	Instructor 1	21%	3.706
	Instructor 2	27%	3.939
	Instructor 3	21%	3.582
	Instructor 4	11%	3.571
	Instructor 5	21%	3.588
Course coordinator (C)	Taught by course coordinator	37%	3.835
	Not taught by course coordinator	63%	3.626
ELA (C)	ELA 1.1	28%	3.770
	ELA 1.2	20%	3.930
	ELA 2.1	30%	3.593
	ELA 2.2	23%	3.569

N: This variable is a numeric scale from 1 to 5, but has been divided into 5 groups to act as a categorical variable for this table. Only the two extreme category labels are shown.

The third and final set of descriptive statistics is in relation to the final survey item asking students to provide up to three words describing their experience with the ELA. 86% of all respondents provided at least one word in response to the final survey item and 59% of respondents provided the maximum three words. The words students wrote were first recorded as seen on the survey. They were then slightly edited to improve future interpretation of this qualitative data whilst keeping students' core ideas/feelings intact as much as possible. More specifically, words given in different tenses were edited so all versions of that word appeared the same tense²⁷. When clear synonyms appeared in the data, one of the words was chosen and instances of the synonym were changed to be consistent with each other²⁸. When students wrote sentences instead of individual words, the key words/ideas of the sentence were extracted and used instead of the whole sentence. Lastly, when students referred to other factors that affected their experience, these factors were categorized and the category was recorded in place of what they said. Three categories were identified: Tutor, Assessment/marks and Topic.

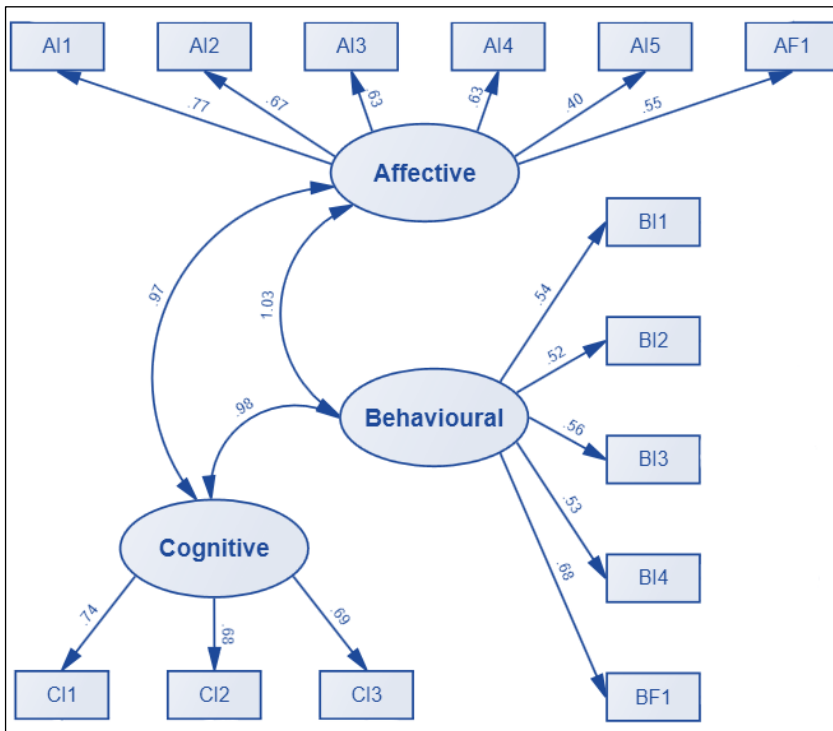
5.7 SURVEY VALIDATION

The confirmatory factor analysis (CFA), which categorizes the instrument-based items as AE, BE or CE, produced item loadings from 0.40 to 0.77 and correlations between the latent variables from 0.97 to 1.03 (Figure 5.5). As previously mentioned in Section 5.5.2, this CFA is used to either support the presence of AE, BE and CE detected in the pilot testing or support the concern that CMV influenced the pilot test EFA. The relatively low item loadings and high correlations between latent variables in this CFA suggest a lack of discriminant validity, a conclusion confirmed as detailed below.

²⁷ For example, challenged and challenging were both present in the raw data. However, all instances of challenged were altered to challenging because it is likely that those students were trying to express a similar idea.

²⁸ For example, hard and difficult both appeared in the raw data. However, all instances of hard were changed to difficult.

Figure 5.5 CFA Path Diagram



No evidence of discriminant validity between AE, BE and CE was found in this data. Using the Fornell-Larcker approach, the squared correlations between every pair of constructs exceeded the Average Variance Extracted (AVE) of both constructs (Table 5.7), showing a lack of discriminant validity. Using the HTMT approach, the HTMT pair ratios for AE-BE, AE-CE and BE-CE were 1.10, 1.06 and 1.02, respectively; far exceeding the benchmark limit of 0.85 required for discriminant validity. Therefore, we conclude no evidence of discriminant validity between the constructs of AE, BE and CE, using both methods. Furthermore, this conclusion holds when the analysis is repeated with the additional theory-based engagement items (listed in Table 4.9).

Table 5.7 Fornell-Larcker discriminant validity (Squared correlations, AVE on the diagonal)

	AE	BE	CE
AE	0.384		
BE	0.540	0.325	
CE	0.551	0.493	0.490

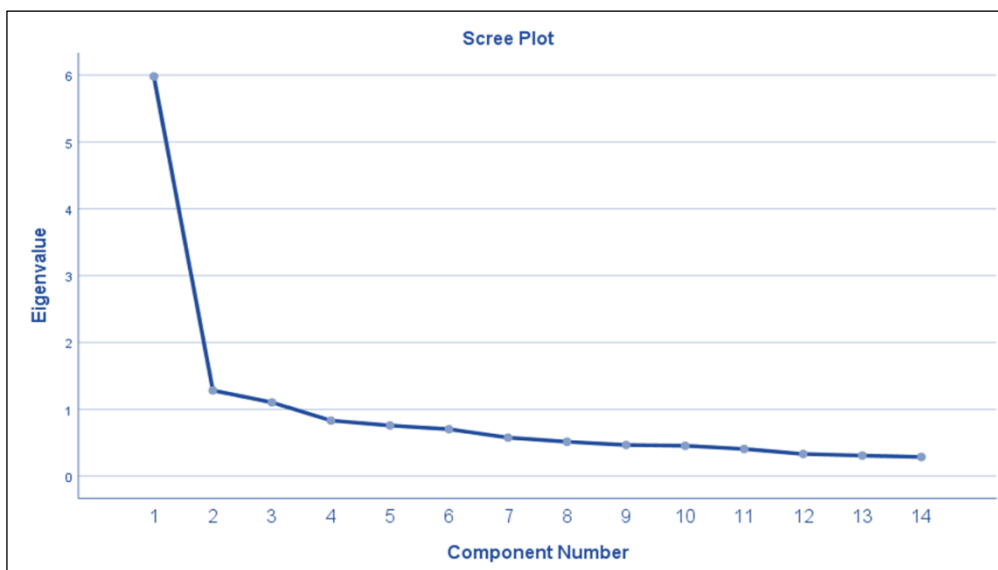
Although the CFA and discriminant validity of the model did not have satisfactory results, the survey is not invalidated by these results. As previously noted in Section 5.5.2, it was expected the data may not differentiate between AE, BE and CE once

Common Methods Variances (CMVs) were removed. Furthermore, as explained in Chapter 2 the engagement literature contains a considerable amount of ambiguity. The literature consistently agrees that engagement incorporates AE, BE and CE, but it does not explicitly state they are distinct from each other. This is further confirmed by the fact past instruments rarely distinguish between AE, BE and CE, also detailed in Chapter 2.

The AVEs presented in Table 5.7 were further investigated because they are lower than the generally accepted threshold of 0.5. When the AVE was calculated for course engagement using the SCEQ (Handelsman et al., 2005) it produced a very similar range of 0.30 to 0.49. Thus the validity of this activity level instrument is similar to the validity of the course level instrument in this regard.

An EFA was also completed to explore other possible sub factors of engagement due to the lack of discriminant validity of the AE, BE, CE confirmatory factor analysis model (Figure 5.5). Based on the relevant scree plot (Figure 5.6), a one factor solution appeared the most reasonable, followed by a three factor model. The one factor solution explained 42.7% of the variance in the data, whilst the next two factors would only explain an additional 9.2% and 7.9%, respectively. Both are reasonable and will be further explored below, but the high percentage of variance explained within the first factor strongly supports the idea student responses to this engagement survey were unidimensional. This suggests it is reasonable to combine these item responses into a single engagement score as intended in this research project.

Figure 5.6 EFA Scree Plot with Items Based on Past Instruments



The one factor and three factor models were further assessed based on the relevant factor loadings of each model. The factor loadings for both models (with highest loading in bold) are presented together in Table 5.8. In the one factor solution, all items have a factor score greater than 0.5 except item AI5, which has a factor loading of 0.434. AI5 was included based on a previously validated instrument, was not found to be ambiguous or misleading and was not very similar to another item in the survey instrument. Therefore, this item was not removed from subsequent analysis. The three factor solution confirms the lack of discriminant validity, with two out of three factors including items categorized as AE, BE and CE. However, the individual factors which emerged from the three factor solution are further analysed below to better understand what underlying dimensions of engagement may be present.

Table 5.8 Factor Analyses Component Matrices with Items Based on Past Instruments

Item	Survey Item Wording	1 Factor Solution	3 Factor Solution		
			1	2	3
AI1	Made an effort	0.783	0.481	0.325	0.551
AI2	Was interested	0.712	0.228	0.796	0.235
AI3	Had fun	0.667	0.294	0.727	0.145
AI4	Acquired/improved job related knowledge and skills	0.671	0.678	0.203	0.240
AI5	Was challenged to do my best work	0.434	0.173	-0.107	0.709
AF1	Was bored and unstimulated ^R	0.598	0.159	0.816	0.084
BI1	Ask questions when you didn't understand the instructor	0.593	0.757	0.168	0.038
BI2	Contribute to a class/group discussion	0.579	0.559	0.208	0.204
BI3	Help fellow students	0.616	0.799	0.090	0.110
BI4	Listened carefully to the instructor when he/she was talking	0.573	0.013	0.307	0.730
BF1	Was focused and on task	0.701	0.210	0.493	0.545
CI1	Analysing ^a	0.744	0.343	0.384	0.581
CI2	Evaluating ^a	0.709	0.606	0.280	0.314
CI3	Applying ^a	0.691	0.463	0.207	0.522

a: These items represent levels in Bloom's taxonomy. See Table 1.1Appendix 11: for the full description provided to students.

R: This item has been reverse coded here and for all subsequent analyses

The first factor encompasses items which reflect students actively interacting with the activity and/or with other people in the class. Asking questions, helping others and contributing to discussions all directly involve students communicating with others.

Evaluating information indirectly requires students to interact with others by requiring them to learn how others gathered and interpreted data. Acquiring job related skills also indirectly requires students to interact with others because job related skills largely consist of transferable skills such as communication and team work. The second factor encompasses items related to students' emotional reactions to the activity. Having fun, being interested and being bored all relate to how much the student enjoyed the activity or how the student felt about the activity. The third factor encompasses items related to students' internal mental processes. Making an effort, being challenged, listening carefully and staying focused are about persistently concentrating on the activity. Applying theories and analysing ideas both relate to mental activities that students perform internally when participating with an ELA.

Although reasonable factors emerged from the above EFA, these factors were not consistent with established engagement theory described in the literature as it did in pilot testing. However, as previously noted, the literature identifies AE, BE and CE as aspects of engagement, but has not stated they are distinct from one another. As this project is the first to apply this theory at an activity level, it is possible these dimensions are still relevant, but there is no differentiation between dimensions for an activity. It is also possible there is an alternative theory which better explains sub-factors of engagement at an activity level. The interpretation of the three factor model above suggests engagement is comprised of active interaction, emotional reactions and internal mental processes (instead of AE, BE and CE).

While there appears to be an overlap between these new dimensions (active interaction, emotional reactions and internal mental processes) and the literature dimensions (AE, BE and CE), the way these categories are compiled is quite different. For example, CE is consistently measured using Bloom's taxonomy and CE appears similar to internal mental processes. However, internal mental processes did not include all items related to Bloom's taxonomy and included other items that simply relate to any thought processes or concentration. This included items previously classified as AE (such as staying focused) and BE (such as listening carefully). It is noted these new dimensions are purely exploratory as they are only based on this data and will, therefore, require additional research to confirm them. However, for the purpose of this study, it is not vital to confirm the underlying sub-factors because the main focus is on the one factor solution. The scree plot of the EFA (Figure 5.6)

suggests a one factor solution is most reasonable. The one factor solution is, therefore, relied on to validate that engagement items in the survey are combined into a student engagement score (SES) for subsequent analysis.

Since the factor analyses and discriminant validity analyses above exclude the newly added theory items, an additional EFA has been completed using all items. Only a one factor solution was examined using all items because the items include ET1, which was designed to measure the overall idea of engagement rather than an individual dimension of engagement. The one factor solution is also aligned with the primary purpose of this factor analysis: determining if these items can be combined to measure engagement. The relevant scree plot (Figure 5.7) shows one factor is reasonable, similar to the factor analysis excluding the theory items. Furthermore, the first factor explains 40.0% of the variance in the data. Table 5.9 presents the factor loadings of each item when a one factor solution is extracted. All items produce a loading greater than 0.5 except AI5, but consistent with the previous factor analysis this item was not removed from subsequent analysis. The one factor solutions with items based on past instruments and all engagement items produced very similar results. Therefore, introducing the new theory-based items does not appear to cause any issue with combining all engagement items to measure student engagement.

Figure 5.7 EFA Scree Plot with All Engagement Items

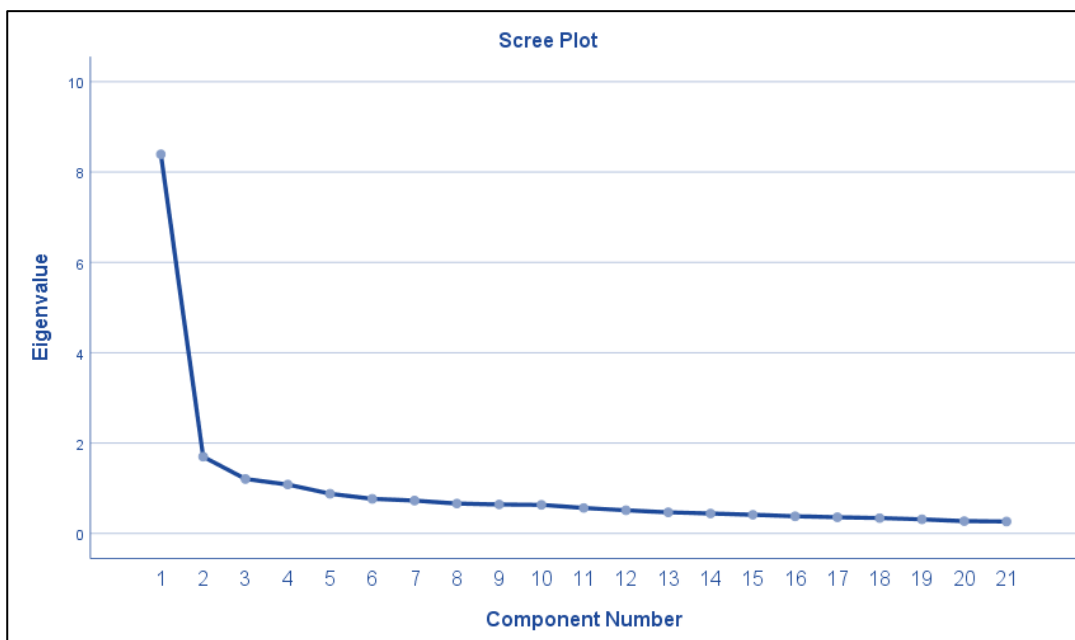


Table 5.9 Factor Analyses Component Matrix with Items Based on Past Instruments

Item	Survey Item Wording	1 Factor Solution
ET1	Was very engaged ^a	0.690
AT1	Thought the activity held a lot of value ^a	0.557
AT2	Was very interested ^a	0.651
AT3	Was very invested in the activity ^a	0.662
AI1	Made an effort	0.750
AI2	Was interested	0.735
AI3	Had fun	0.658
AI4	Acquired/improved job related knowledge and skills	0.631
AI5	Was challenged to do my best work	0.396
AF1	Was bored and unstimulated ^R	0.636
BT1	Was very actively involved ^a	0.688
BT2	Was very attentive ^a	0.639
BI1	Ask questions when you didn't understand the instructor	0.536
BI2	Contribute to a class/group discussion	0.529
BI3	Help fellow students	0.561
BI4	Listened carefully to the instructor when he/she was talking	0.535
BF1	Was focused and on task	0.697
CT1	Used a lot of mental effort ^a	0.578
CI1	Analysing ^b	0.700
CI2	Evaluating ^b	0.669
CI3	Applying ^b	0.665

a: Only the positive extreme of the Likert-scale for each of these items is provided in the table.

b: These items represent levels in Bloom's taxonomy. See Table 1.1Appendix 11: for the full description provided to students.

R: This item has been reverse coded here and for all subsequent analyses

The internal consistency of all scale options (all scale options are detailed in Table 5.4), based on Cronbach's alpha and composite reliability, fall within an acceptable range and show a trend of higher reliability when more items are used (Table 5.10).

The AVE values exceed the benchmark of 0.5 for all scales except ALL and I14, and shows a trend of lower AVE when more items are used in the scale (Table 5.10). The AVE for ALL and I14 are below 0.5, but are consistent with the AVEs for the course level engagement instrument, the SCEQ, which ranges between 0.30 and 0.49 (Handelsman et al., 2005).

Table 5.10 Reliability for all engagement scales

	<i>ALL</i>	<i>I14</i>	<i>I6</i>	<i>T6</i>	<i>I3S</i>	<i>T3S</i>	<i>I3</i>	<i>T3</i>
Cronbach's Alpha	0.92	0.89	0.81	0.82	0.71	0.77	0.64	0.69
Composite Reliability	0.93	0.91	0.87	0.87	0.82	0.86	0.81	0.83
AVE	0.40	0.43	0.52	0.53	0.53	0.60	0.58	0.62

Consistent with pilot testing, the external validity of the student survey was evaluated by comparing the *SES* from the student survey (the *ALL* scale) to the student engagement calculated from the observation notes and the instructor survey²⁹. A small negative correlation was found between the engagement scores from the student survey and observation notes ($r = -0.131$). There is also a small negative correlation between the student survey and instructor survey engagement ($r = -0.212$). In contrast to pilot testing, these correlations are negative and do not successfully corroborate the student survey *SES*. However, this does not necessarily indicate an issue with the survey instrument. Therefore, the relationship between the three perspectives was further investigated to determine if there is an issue with the survey instrument or if there is another probable cause for these poorer correlations.

Plots comparing the student survey with the observation notes (Figure 5.8) and instructor survey (Figure 5.9) were generated and visually inspected. Figure 5.8 presents the students' engagement scores from the student survey on the y-axis in box plots grouped according to which class they attended, with the x-axis showing the class arranged from lowest to highest engagement according to the observation notes for each class. Figure 5.9 presents the students' engagement scores from the student survey on the y-axis in box plots grouped according to which instructor they were taught by, with the x-axis showing the instructor arranged from lowest to highest engagement according to the instructor surveys.

²⁹ The process of calculating engagement scores from the student survey, instructor survey and observation notes were consistent with the process described during pilot testing. Therefore, please refer to Sections 5.5.1 and 5.5.2 for details on how the engagement scores for each perspective were calculated.

Figure 5.8 Student Engagement by Class Box Plot

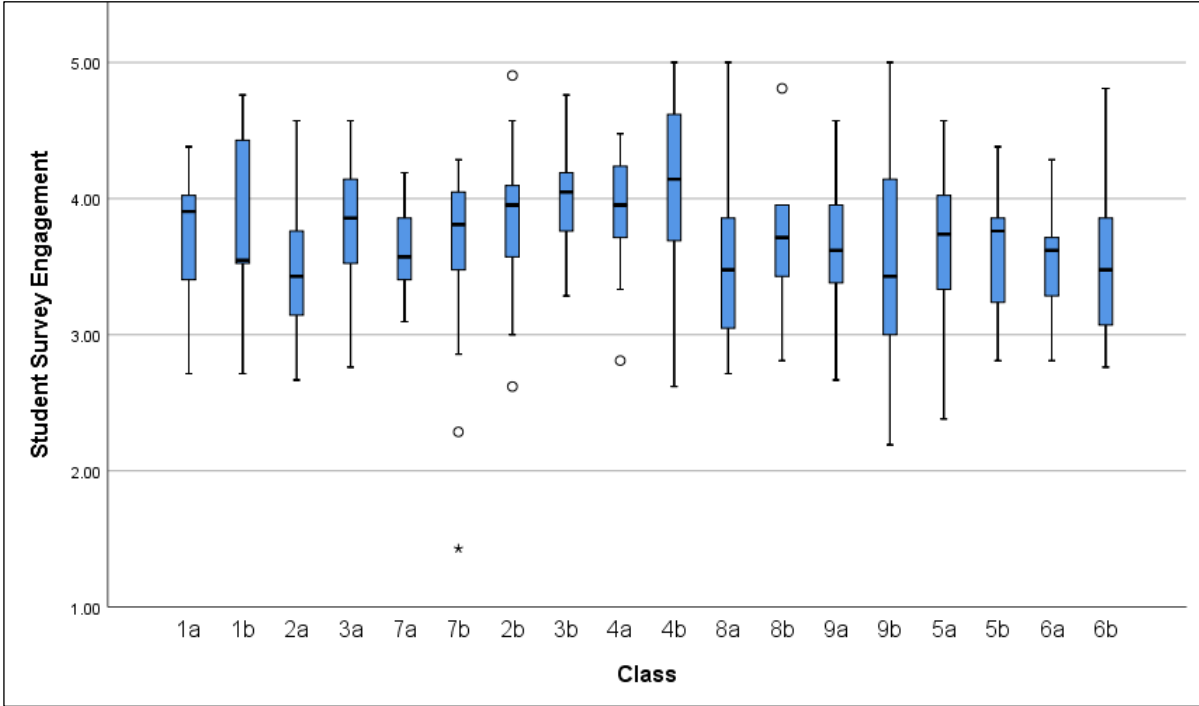
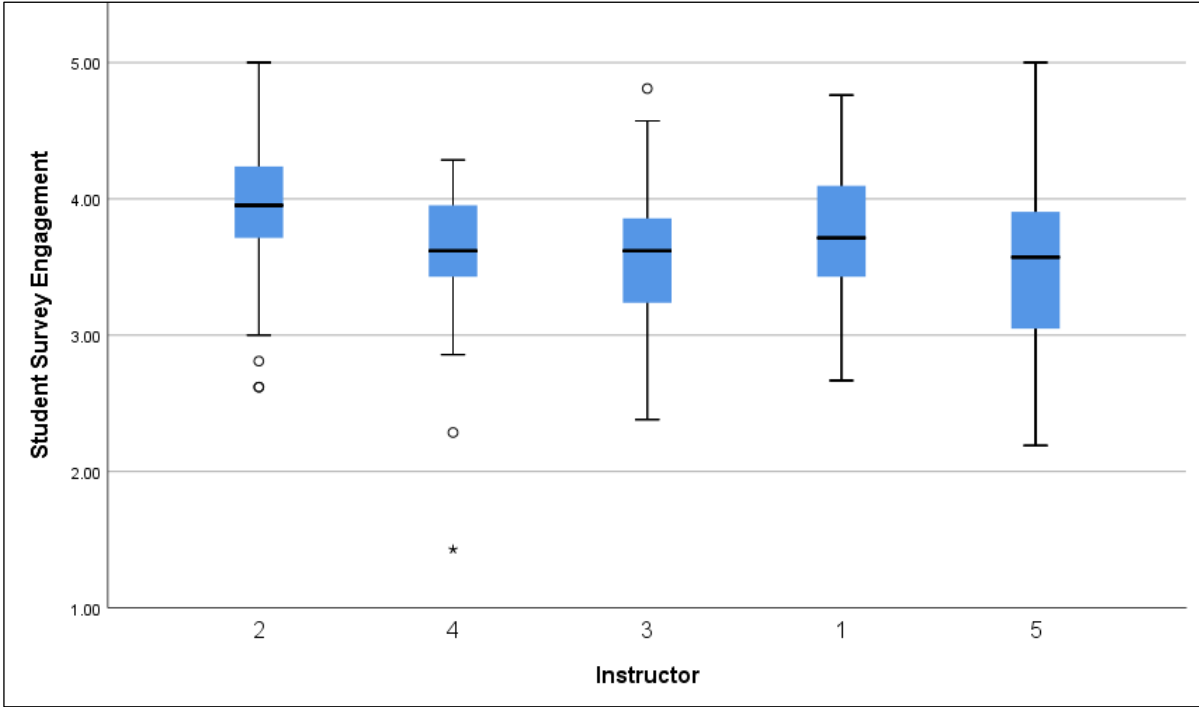


Figure 5.9 Student Engagement by Instructor Box Plot



The above figures show a visible overlap in the student survey engagement scores between classes/instructors. In fact, T-tests of *SES* between each possible pair of classes show only 23/153 (15%) pair combinations are significantly different. The same T-tests for student survey engagement scores between instructors shows 4/10 (40%)

pair combinations are significantly different, but this percentage is misleading because only one instructor is significantly different to all the other instructors. In contrast, the T-tests on the pilot test data reveal more significant pair combinations for both classes and instructors (38% and 70%, respectively). Furthermore, the mean *SES* in the above box plots fall within a range of 0.602 (Min=3.454; Max=4.056) when grouped by class and 0.368 (Min=3.571; Max=3.939) when grouped by instructor. This range is much smaller than the range present in the pilot testing, which was 1.150 (Min=2.912; Max=4.062) when grouped by class and 0.925 (Min=2.191; Max=3.844) when grouped by instructor.

The above additional investigation provided a probable cause for the poorer correlation results achieved between the three perspectives in the principle testing compared to the pilot testing. There is noticeably less spread in the principle testing than the pilot testing, which means the class/instructor groups of students were more similar to one another in the principle testing. If differences in engagement between class/instructor groups are too small in the student data, it would make it difficult to accurately detect the differences between groups of students from an external perspective (the observer and instructor are external to the student). Furthermore, it may simply be inherently difficult to accurately measure student engagement from an external perspective because instructors and observers are not able to perceive many components of engagement because they are internal for the students (such as mental effort and concentration). These elements make correlation with individual student engagement scores and observation/instructor data troublesome. Therefore, it is likely the poorer correlations between these perspectives are an indication of the lack of significant variation between class/instructor student groups or an inherent issue with measuring student engagement accurately from an external perspective, rather than an indication of any issue with the student survey instrument.³⁰

Lastly, the responses to the survey's open ended question provided face validity for the survey instrument. The *SES* was compared between students who did and did not write 'interesting' and 'boring', respectively, using T-tests. The *SES* was significantly higher ($p = .001$) and significantly lower ($p = .004$) for the students who wrote 'interesting' and

³⁰ Whilst this triangulation between the three perspectives was not successful in this dataset, it was still worth attempting and documenting in this thesis. The pilot test results showed triangulation of student engagement from these perspectives can successfully provide external validity when there is enough variability between the student groups.

'boring', respectively, compared to the students who did not. This shows the most prominent positive and negative words written by students reflect a corresponding difference in the *SES*. Therefore, face validity that the relevant items measure engagement is suggested by these results.

5.8 RESULTS

The following subsections detail the results relevant to Research Question 1 (What student characteristics can influence student engagement from ELAs?) and Objective 1 (Develop a survey instrument to measure university accounting students' engagement from one ELA).

5.8.1 RELATIONSHIPS BETWEEN STUDENT ENGAGEMENT AND DEMOGRAPHICS

Table 5.11 presents a summary of the forward stepwise regression analysis, which investigates the relationships between student engagement and the demographic/control variables. The first and second columns in Table 5.11 provide the independent variable label and the number of valid responses for each independent variable. For categorical variables with more than two categories, each category is allocated a line in the table. The first category is a placeholder for the results of the variable as a whole, not the single category within that variable, and the other categories within the variable are being compared to the first category. For example, *Class* is a categorical variable with nine categories. The first line is labelled 'Class (1)' because this first line represents the *Class* variable as a whole and Class 1 is the baseline category for the other categories. Categorical variables with two categories are represented on one line because there is only one pair of possible responses in the resultant regression equation. Therefore, no new information would be provided by explicitly presenting the second category in the table. For example, the table shows *International* has a coefficient of 0.332. Domestic students are not included in the table separately because its coefficient would be -0.332. Lastly, numeric variables are represented on a single line as the coefficient shows the change in *SES* for every unit of change in the numeric independent variable. *ELA experience* is the only numeric independent variable in this analysis.

Table 5.11 Summary of Forward Stepwise Regression Results

Independent Variable	Valid Sample Size	Individually	With International	With International and ELA Experience	With International, ELA Experience and Work Experience
International (H5)	271	0.332 (0.000)			
ELA Experience (H4)	274	0.151 (0.002)	0.131 (0.005)		
Work experience (H1)	269	0.152 (0.027)	0.149 (0.024)	0.132 (0.045)	
Male (H2)	271	-0.115 (0.102)	-0.038 (0.585)	-0.009 (0.896)	-0.006 (0.929)
EAL (H3)	274	0.330 (0.000)	0.168 (0.181)	0.149 (0.233)	0.161 (0.207)
Real case (H6)	274	0.053 (0.444)	0.054 (0.416)	0.076 (0.250)	0.065 (0.330)
Live case (H6 & H11)	274	0.283 (0.001)	0.148 (0.096)	0.147 (0.094)	0.128 (0.145)
Previously completed	272	0.034 (0.632)	0.011 (0.877)	0.027 (0.686)	0.017 (0.797)
Course 1	274	0.262 (0.000)	0.060 (0.522)	0.022 (0.817)	-0.006 (0.950)
Class (1)	274	(0.004)	(0.650)	(0.719)	(0.567)
Class 2		-0.058 (0.742)	-0.102 (0.561)	-0.100 (0.566)	-0.048 (0.788)
Class 3		0.194 (0.263)	0.113 (0.514)	0.116 (0.498)	0.198 (0.263)
Class 4		0.244 (0.168)	0.164 (0.356)	0.148 (0.400)	0.215 (0.233)
Class 5		-0.082 (0.672)	0.010 (0.958)	0.041 (0.834)	0.135 (0.507)
Class 6		-0.181 (0.309)	-0.058 (0.749)	0.007 (0.969)	0.071 (0.703)
Class 7		-0.152 (0.408)	-0.042 (0.824)	-0.030 (0.870)	0.060 (0.753)
Class 8		-0.171 (0.354)	-0.032 (0.866)	-0.006 (0.974)	0.087 (0.654)
Class 9		-0.103 (0.573)	0.023 (0.901)	0.063 (0.735)	0.156 (0.418)
Morning Class	274	0.068 (0.328)	0.032 (0.633)	0.023 (0.736)	0.028 (0.682)
Instructor (1)	274	(0.000)	(0.269)	(0.264)	(0.273)
Instructor 2		0.231 (0.017)	0.206 (0.032)	0.209 (0.027)	0.208 (0.028)
Instructor 3		-0.135 (0.186)	0.032 (0.788)	0.090 (0.448)	0.110 (0.361)
Instructor 4		-0.142 (0.253)	0.023 (0.864)	0.039 (0.771)	0.071 (0.601)
Instructor 5		-0.127 (0.213)	0.062 (0.600)	0.100 (0.397)	0.137 (0.256)
Course Coordinator	274	0.212 (0.003)	0.116 (0.106)	0.100 (0.160)	0.097 (0.176)
ELA (1.1)	274	(0.001)	(0.411)	(0.394)	(0.460)
ELA 1.2		0.154 (0.116)	0.147 (0.126)	0.163 (0.088)	0.152 (0.111)
ELA 2.1		-0.187 (0.033)	0.011 (0.916)	0.046 (0.668)	0.075 (0.493)
ELA 2.2		-0.214 (0.023)	-0.021 (0.857)	0.040 (0.726)	0.058 (0.623)

The remaining columns all represent the relevant results yielded by each step in the forward stepwise regression. More specifically, the third column represents the first step by listing the coefficient with the relevant p-value in brackets when each

independent variable is individually placed in a regression analysis to predict *SES*. For categorical variables with more than two categories, the first line does not contain a coefficient because it is the baseline category. However, p-values, which are still provided in the first row of these categorical variables, reflect the significance of the whole variable in relation to *SES*. The p-values provided for the remaining categories reflect the significance of their difference to the relevant baseline category. The most significant independent variable in the third column is selected to be included as the first independent variable in the regression model being developed using this forward stepwise regression process. As per Table 5.11, the first independent variable included in the regression is *International (H5)*.

The fourth, fifth and sixth columns then detail the coefficient and significance of each independent variable when it is placed into a regression along with the most significant independent variable(s) identified in the preceding column(s). The most significant variable identified in each column is bolded. As per Table 5.11, *ELA experience (H4)* and *Work experience (H1)* were added to the regression equation in the fourth and fifth column, respectively. The sixth column shows no additional variables were significant enough to add to the regression equation.

Once an independent variable is included in the model the remainder of the row is greyed out as its coefficient and p-value do not remain constant with the introduction of the other independent variables. However, it is noted these variables did remain significant in the final regression model, which is provided in Table 5.12 below.³¹ A regression model using all variables is not provided because some variables are highly correlated, which will be further detailed in the subsequent hypotheses testing.

³¹ The interactions between independent variables were also examined and no relevant results were found

Table 5.12 Multiple Regression Explaining SES Final Model

Parameter	Coefficient	P-value
Intercept	3.069	0.000
International (H5) ^A	0.306	0.000
ELA experience (H4) ^B	0.115	0.015
Work experience (H1) ^C	0.132	0.045

A: coded 0 for domestic students and 1 for international students

B: coded on a numerical scale from 1 for Never to 5 for Almost every class

C: coded 0 for no work experience and 1 for having work experience

The remainder of this subsection tests the relevant individual research questions and hypotheses using the forward stepwise regression results, which are occasionally supplemented with additional analyses if necessary to further understand the regression results. It is noted the variables *Previously completed*, *Course*, *Class*, *Morning Class*, *Instructor*, *Course Coordinator* and *ELA* are not used for hypothesis testing, but were included in the forward stepwise regression as a control variable to ensure these factors did not significantly impact student engagement. As seen in Table 5.11, none of these control variables were included in the final regression model because none of them were the most significant variable at any step in the multiple regression analysis. Some of the control variables were significant when analysed individually. However, all these control variables were highly correlated with International, which better explained variations in student engagement. For example, *Course* was significant in step 1, but became insignificant because most students who are international were enrolled in course 1 (Table 5.13). Therefore, it has been accepted these control variables did not impact student engagement.

Table 5.13 Cross Tabulation of International vs Course

	Course 1	Course 2
International	122	32
Domestic	9	108

Research Question 1 (What student characteristics can influence student engagement from ELAs?) encompasses five hypotheses (H1 – H5). These hypotheses investigate the effects of various student characteristics on *SES*. Each factor’s relationship with *SES* is first considered in isolation, disregarding any other independent variables, as per the process of completing a forward stepwise regression. However, the final

decision regarding whether to accept or reject each hypothesis is ultimately made taking all other independent variables into consideration.

Hypothesis 5 (H5) states there is an association between a student's engagement from an ELA and whether the student is international or domestic. According to the regression analysis (Table 5.11), *International* is the most significant variable in step one when it is considered individually. Consequently, it was chosen as the first variable to be included in the final regression model (Table 5.12). As such, H5 is accepted in relation to the ELAs measured in this study; international students are more engaged than domestic students.

H4 and H1 state there is an association between a student's engagement from an ELA and the extent which the student has already experienced ELAs, and how much accounting work experience the student has, respectively. The regression results (Table 5.11) show both independent variables *ELA experience* and *Work experience* were significant both individually and in combination with other more significant variables from preceding steps in the forward stepwise regression. *ELA experience* was the most significant variable in step 2 and was the second variable to be included in the final regression model (Table 5.12). *Work experience*³² was the most significant variable in step 3 and was the third and final variable to be included in the final regression model (Table 5.12). Therefore, based on this data, H4 and H1 were accepted; the more experience a student has with ELAs, the more engaged they are with ELAs, and students are more engaged when they have accounting work experience.

H2 states there is an association between a student's engagement from an ELA and the student's gender. Table 5.11 above shows there is no significant difference in *SES* between males and females in isolation or in combination with other significant factors. Therefore, H2 is rejected.

³² Please note, whilst the survey instrument asked students to indicate how much relevant work experience they had (more or less than 4 weeks), the data was coded as a dichotomous variable indicating only whether students do or don't have relevant work experience. This decision was made because there was no significant difference in engagement between students with more or less than 4 weeks relevant work experience and the above regression results were actually less significant when the work experience variable distinguished between students with more and less than 4 weeks experience. Furthermore, the split between students simply with or without relevant work experience was very even and, therefore, better suited for this regression analyses.

H3 states there is an association between a student's engagement and the student's first language. The independent variable *EAL* was significant in the first step of the forward stepwise regression, when considered individually, but became insignificant when placed in a regression model with *International*. *EAL* became insignificant because most students who are international have English as an additional language (Table 5.14).

Table 5.14 Cross Tabulation of *International* vs *EAL*

	EAL	EFL
International	150	4
Domestic	17	100

The similarity between *International* and *EAL* is expected because many international students will come from non-English speaking countries. *International* was selected over *EAL* because it was more significant. Furthermore, when verifying this decision it was noted that *SES* may have a more significant relationship with *International* than with *EAL* because *International* is likely to better indicate cultural differences. Students with English as an additional language will include students who are new to Australia as well as those who have been in Australia since childhood and went through Australian schooling systems, with no distinction between the two situations made in the measurement variables of this study. Therefore, based on the forward stepwise regression analysis and the above reasoning, there was insufficient evidence to support H3.

Hypotheses 1-5 were investigated to answer Research Question 1 (What student characteristics can influence student engagement from ELAs?). *Male* (*H2*) was not significant at any stage in the regression analysis, while *EAL* (*H3*) was significant only when considered individually. Only three variables were significant in combination based on the forward stepwise regression analysis performed. These three factors that significantly explain *SES* are *International* (*H5*), *ELA experience* (*H4*) and *Work experience* (*H1*), in order of significance. The final regression model achieved through forward stepwise regression analysis was presented in Table 5.12 above. In essence, this equation represents the combination of factors that best explain the variances in *SES* using the data available. However, it is noted it may be difficult to tell exactly what variables are actually driving student engagement because some variables in this data

are highly correlated (such as *EAL* and *International*). As such, this regression equation may contain errors, but it provides the best available answer to Research Question 1 using the existing data.

Research Question 2 (What ELA characteristics can influence student engagement from ELAs?) encompasses the investigation of two hypotheses (H6 and H11). H6 states there is a positive association between the authenticity of an ELA and student engagement with the ELA. H11 states there is a positive association between an ELA being current and student engagement with the ELA. *Real case* was used as evidence for H6, whilst *Live case* was used as evidence for H6 and H11 combined.

The data included one live case (ELA 1.2), one real case study (ELA 2.2) and two fictional case studies (ELA 1.1 and ELA 2.1). As per the regression results (Table 5.11), the independent variable *Live case* was a significant predictor of engagement in isolation, but became insignificant in step two when *International* was already in the regression. The independent variable *Real case* was insignificant in all steps of the forward stepwise regression. A cross tabulation of p-values yielded from t-tests of *SES* between each possible pair of ELAs (Table 5.15) shows only ELAs in different courses are significantly different from each other. This shows the initial significant result achieved for *Live case* is better explained by Course. Furthermore, it explains why *Live case* was initially significant when *Real case* was not, because one activity from each course was based on real information whereas only one of the courses included a live case. Therefore, based on this available data, there is insufficient evidence to support H6 and H11. ELA characteristics' relationships with student engagement will be further explored in Phase 2 of the study (Chapter 6).

Table 5.15 Cross tabulation of P-values From T-tests between Individual ELAs

ELA Type	→	Fictional Case Study	Fictional Case Study	Real Case Study	Live Case
↓	↓ ELA →	ELA 1.1	ELA 2.1	ELA 2.2	ELA 1.2
Fictional Case Study	ELA 1.1		0.033	0.023	0.116
Fictional Case Study	ELA 2.1	0.033		0.768	0.000
Real Case Study	ELA 2.2	0.023	0.768		0.000
Live Case	ELA 1.2	0.116	0.000	0.000	

5.8.2 COMPARING ENGAGEMENT SCALE OPTIONS

This section investigates the potential of using fewer items to measure student engagement at an activity level by comparing scales of varying sizes (relevant scales are detailed in Table 5.4). The scales range in size from *ALL* (21 items) to *S* (1 item). Table 5.16 presents a bar graph of the R-squared for each scale compared to the *ALL* scale, overlaid by a line graph showing the number of items in each scale. A decrease in the number of items used in the scale results in a disproportionately lower decrease in R-squared. For example, scale *I6* uses only 6 out of the 21 items (29%) in scale *ALL*, but captures 80% of the variance in *ALL*. Similarly, *S* captures over 40% of the variance using only 5% of the number of items (1 out of 21 items). This data suggests it is inefficient to use the larger scales, but further analysis is required to determine the consequences of the loss in detail when using the smaller scales. Using this data alone, it is not possible to know how much variance lost is too much. Therefore, the remainder of this subsection compares regression results using each of these scales to further investigate the validity of using fewer items to measure engagement.

Table 5.16 Scales' R squared and number of items

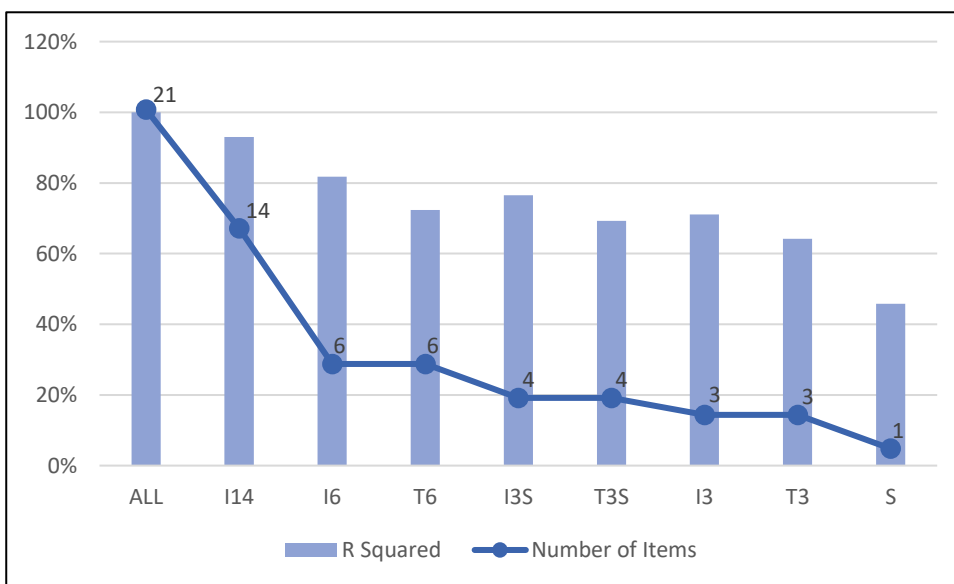


Table 5.17 presents a summary of the multiple regression models used to compare the scales included in this study. The independent variables used in these regressions are consistent with the forward stepwise regression, except for those variables found to be highly correlated with *International*, *ELA experience* or *Work experience*. Each column in Table 5.17 represents the regression model for each scale by listing the regression coefficient and p-value in brackets for each independent variable as specified by the

row. The independent variables which yield a significant relationship with the relevant student engagement ($p < 0.05$) are bolded. The table also includes the intercept for each model in the first row before the independent variables are listed.

Table 5.17 Summary of Multiple Regression Models Per Scale

	ALL	I14	I6	T6	I3S	T3S	I3	T3	S
Intercept	3.034 (.000)	2.955 (.000)	3.122 (.000)	3.21 (.000)	3.161 (.000)	3.079 (.000)	3.188 (.000)	3.079 (.000)	3.078 (.000)
International	0.295 (.000)	0.337 (.000)	0.186 (.015)	0.239 (.003)	0.150 (.051)	0.217 (.012)	0.182 (.024)	0.273 (.003)	0.052 (.630)
ELA experience	0.120 (.014)	0.120 (.018)	0.119 (.025)	0.112 (.047)	0.125 (.020)	0.118 (.052)	0.112 (.047)	0.103 (.102)	0.164 (.030)
Work experience	0.132 (.049)	0.135 (.054)	0.129 (.079)	0.132 (.089)	0.102 (.169)	0.168 (.046)	0.104 (.184)	0.191 (.028)	0.098 (.347)
Real case	0.089 (.344)	0.134 (.172)	0.210 (.042)	-0.013 (.906)	0.160 (.124)	0.054 (.644)	0.190 (.082)	0.049 (.685)	0.069 (.635)
Morning class	0.031 (.653)	0.069 (.336)	0.138 (.066)	-0.057 (.470)	0.068 (.368)	0.025 (.771)	0.082 (.303)	0.024 (.784)	0.027 (.801)
Male	-0.019 (.785)	-0.047 (.520)	-0.024 (.757)	0.038 (.644)	0.036 (.641)	0.044 (.614)	0.038 (.642)	0.049 (.592)	0.031 (.776)
Previously completed	-0.061 (.528)	-0.079 (.432)	-0.143 (.175)	-0.047 (.675)	-0.066 (.535)	-0.043 (.720)	-0.124 (.267)	-0.094 (.452)	0.108 (.467)

The two extreme options, using *ALL* or *S*, are the least attractive scales to measure student engagement. *ALL* technically captures the most detail, but the benefits of including all 21 items in a questionnaire may not be considered worthwhile, especially when studies investigating relationships between numerous constructs might require long questionnaires. In particular, *I14* provided very similar results to *ALL* using only 14 of the 21 items. *S* is a less attractive option because it only yielded one of the significant independent variables (*ELA experience*), missing the most significant relationship with *International*, which was found with almost all other engagement scale options.

As previously stated, *I14* yields very similar results to *ALL* in the regression equation. While only the first two of three significant relationships were found to be significant with *I14* (*International* and *ELA experience*), the third most significant variable (*Work experience*) is very close to the 0.05 cut-off point for significance. A larger sample size would likely result in *Work experience* being significant. Furthermore, *I14* explains a large portion (93%) of the variance capture by *ALL*. Therefore, if there is enough room

for a large scale, *I14* appears to be the most efficient option without sacrificing noticeable differences in results.

Scales *I6*, *I3* and *I3S* are all subsets of *I14*, used to assess if engagement can be measured using fewer items while keeping the nature of the items consistent with past course level instruments. Compared with *ALL*, *I6* identifies two out of three significant relationships (*International* and *ELA experience*). However, it also identifies *Real Case* as significant when no other scale yields a significant relationship between student engagement and *Real case*. *I3* also yields the first two significant relationships without the additional *Real case* relationship. Finally, *I3S* only yields one out of the three significant relationships (*ELA experience*), but does not identify the most significant relationship found using *ALL* (*International*). While *I14* appears to be a reliable option to measure student engagement, scale *I6*, *I3* and *I3S* appear to show a trend that using subsets of *I14* may be problematic. This could be because the items comprising *I14* are very narrow and specific, which may require more items to present an accurate representation of engagement.

Scales *T6*, *T3* and *T3S* are all based on the newly added theory items. *T6* constitutes all the theory items added to the survey while *T3* and *T3S* are subsets of *T6*. Scale *T6* provides results that are reasonably consistent with *ALL*; the two most significant relationships (*International* and *ELA experience*) are both identified. *T3S* and *T3* both identify two out of three significant relationships as well, but they are *International* and *Work experience* (instead of *ELA experience*). Therefore, this data suggests scales based on theory items measure student engagement reliably despite reducing the number of items in the scale.

5.9 QUALITATIVE RESULTS AND DISCUSSION

The quantitative testing above identified three variables that together may predict *SES*: *International*; *ELA experience*; and *Work experience*. Therefore, the available qualitative data will be used to further investigate these three factors predicting student engagement to attempt to explain why each variable is a predictor of engagement. The various word clouds below often present a similar impression that respondents found the activities interesting, challenging and useful. However, the remainder of this subsection will identify and interpret the finer trends that differ between students grouped based on the three variables listed above.

Two word clouds were created in relation to *International*: one for domestic students (Figure 5.10) and one for international students (Figure 5.11). One of the main differences between these two word clouds is 'difficult' is one of the most prominent words for international students, but is only very small for domestic students. Additionally, while 'challenging' is prominent in both word clouds, it is noticeably larger for international students as well. This suggests more international students found the activities difficult compared to domestic students. Since *International* is closely related to other variables, there are a number of possible reasons why international students wrote difficult more than domestic students. For example, most international students have English as an additional language. Therefore, these students may find the activity difficult because they must work to understand both what the instructor says and the concepts or theories the activity aims to teach. Another example is that international students were mostly enrolled in course 1, while domestic students were mostly enrolled in course 2. Therefore, more international students may have written difficult because the content in course 1 is more difficult than course 2. However, the fact international students wrote difficult more than domestic students is interesting, despite the underlying uncertainty about the reason for the result, because international students were found to be more engaged. Therefore, this finding in the qualitative data suggests students may be more engaged if an activity is more difficult. This suggestion also corresponds with the idea of cognitive engagement: students are more engaged when they are required to invest more mental energy into a task and use higher order thinking skills.

Figure 5.10 Domestic Students Word Cloud



Figure 5.11 International Students Word Cloud



Two word clouds were created in relation to *ELA experience*: One for low experience (Figure 5.12) and one for high experience (Figure 5.13). The low experience word cloud comprises respondents who indicated an average experience of less than 4 on the 5-point Likert scale, whilst the high experience word cloud comprises respondents who indicated 4 or above. One of the differences between these word clouds is 'Assessment/marks' is medium sized for low ELA experience respondents, but non-existent for high ELA experience students. This shows students with less ELA experience are more focused on how the activity impacts or helps with upcoming assignments and/or tests. This is interesting because it implies students who have more experience with ELAs may see the value in an ELA beyond the classroom. Therefore, since ELA experience was positively associated with student engagement, this data also implies students who see the value in an ELA beyond the classroom are subsequently more engaged with ELAs.

Another difference between the word clouds below is 'Tutor' is medium sized for high ELA experience respondents, but non-existent for low ELA experience respondents. This suggests students with more ELA experience put more emphasis on how the tutor impacted their experience with an ELA. This could be because they have more past experience to compare the current ELA experience with. More specifically, the tutor facilitating the activity is possibly an easily identifiable difference between past and current ELA experiences when students have more past experience with ELAs. Interestingly, this difference can be positive or negative, as reflected by the raw data subsequently categorized as 'Tutor' including both positive and negative comments. This is interesting because it may explain why the differences in SES between tutors and course coordinators was not consistent enough to accept the related hypotheses.

Two word clouds were created in relation to *Work experience*: One for students with work experience (Figure 5.14) and one for students without (Figure 5.15). One of the noticeable differences between these word clouds is ‘fun’ is twice as prominent for respondents without work experience than respondents with work experience. This implies students with work experience enjoyed the activities less than students without work experience, or at least did not place as much emphasis on how fun the activity was. This could mean students with work experience simply take the activity more seriously because they better understand the future workplace needs for the skills/knowledge being learnt during the activities. Alternatively, it could mean students with work experience place more value on other things such as how useful the activity is rather than how fun the activity is. This is interesting because fun is often subconsciously associated with engagement, but in this case, since having work experience was positively associated with student engagement, the students saying they had fun were less engaged. This qualitative data appears to show the understanding the importance of the task and taking it seriously is more indicative of engagement than having fun.

Figure 5.14 Students With Work Experience Word Cloud

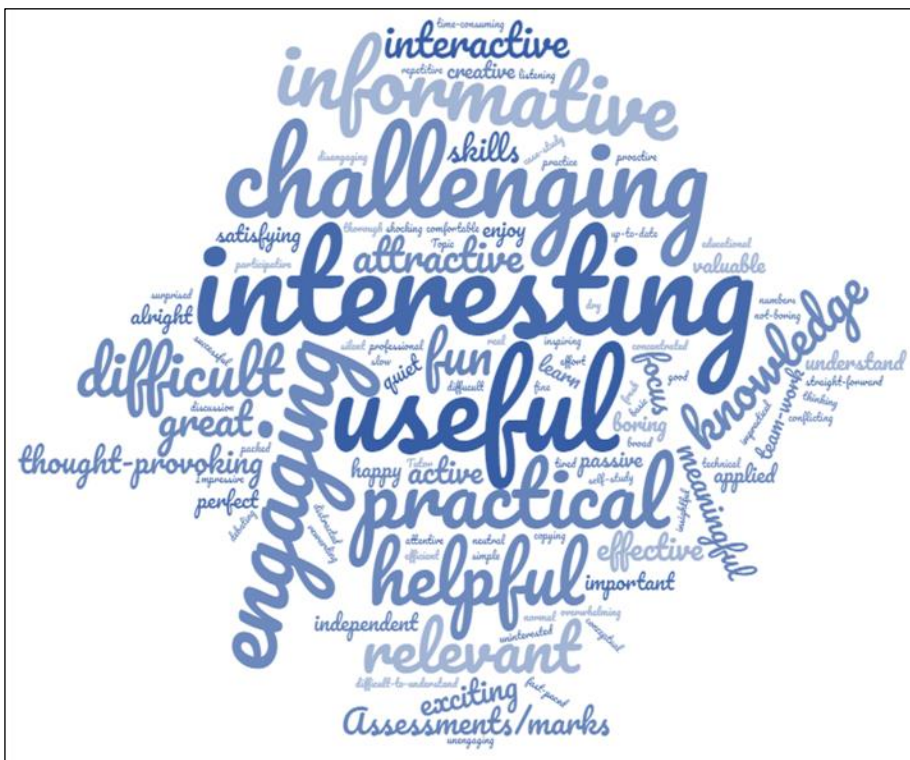


Figure 5.15 Students Without Work Experience Word Cloud



5.10 DISCUSSION

This section discusses conclusions and implications of the results in relation to the literature. The discussion predominantly focuses on the results of the principle testing presented in this chapter, but where relevant some pilot testing results from Chapter 4 are discussed in relation to the results in this chapter. It is arranged under 4 themes: Student Engagement as a Construct; Measuring Engagement from an Activity Versus a Course or Institution; Research Question 1 (What student characteristics can influence student engagement from ELAs?); and Reducing the Number of Items Used to Measure Engagement.

5.10.1 THEME 1 – STUDENT ENGAGEMENT AS A CONSTRUCT

Discriminant validity between AE, BE and CE was not present in this data once common method variance was removed. The literature contains mixed perspectives on whether or not there should be discriminant validity. The theory presents AE, BE and CE as interrelated components of engagement (Mandernach, 2015), and consequently some of the literature measures engagement as a single construct (simply adding the AE, BE and CE items together as a single score) and ignoring the AE, BE and CE theoretical structure for statistical analyses (Ahlfeldt et al., 2005). However, some

literature on course level instruments use components of engagement as separate dependent variables in regression analyses (Appleton et al., 2006; Handelsman et al., 2005) without empirical justification they measure separate constructs. Our results suggest AE, BE and CE are not distinguishable from each other for measurement purposes. However, this does not contradict the theory that engagement includes these interrelated concepts. Perhaps these elements are so intertwined it is difficult, in practice, to have one without the other two.

Another possibility is engagement should be measured formatively rather than reflectively (as in the factor analyses above). Whilst the internal consistency results were positive, the AVEs in this study as well as the SCEQ (Handelsman et al., 2005) were lower than the generally accepted benchmark of 0.5 for Reflective models. However, consider the two AE items *A/2* (was interested) and *A/5* (was challenged to do my best work). Both these items might form engagement however high engagement might not be reflected in high values for both these items. For example, a student might be engaged in trying to answer a challenging activity but this can occur without them finding the activity interesting (or fun (*A/3*) or acquired/improved job-related knowledge and skills (*A/4*)). In short, engagement can occur for different reasons and in different ways, a phenomenon often described as the multidimensional nature of engagement in the literature (Trowler, 2010). We discuss this multidimensional nature of engagement further under Theme 2 because it may be more pronounced at the activity level.

5.10.2 THEME 2 – MEASURING ENGAGEMENT FROM AN ACTIVITY VERSUS A COURSE OR INSTITUTION

This activity level instrument was initially developed by modifying course level instruments, similar to how course level engagement instruments were developed from institutional level instruments. However, when applied to an activity level, this method may be more problematic.

Items developed from past course level instruments (I items), by nature, are specifically related to different individual student behaviours, thoughts and feelings. Engagement is theorized to be multidimensional and the individual items are designed to measure the various dimensions of engagement in detail so the items can be put together to form an overall picture of engagement. Although the multidimensional nature of engagement may exist to this level in the institutional and course instruments, it may be more

problematic when measuring engagement from an activity. This is because one activity is unlikely to achieve (or even aim to achieve) many objectives simultaneously (such as being fun, interesting, relevant to work, promote classroom discussion, etc.). An engagement instrument could be designed for a specific activity by only including items which relate to the particular activity's objectives and excluding items which don't. However, having a single instrument for all activities has benefits, such as the ability to compare overall engagement between different activities. The extent to which the theoretical AE, BE and CE model applies to institutional and course engagement remains an open question for future research. Especially at the activity level, some low responses to items could inaccurately indicate disengagement when it is in fact due to lack of opportunity.

Another example of an item which is problematic when converting to an activity level is *CI4* (memorising), which was removed as a result of pilot testing. Past instruments include memorisation as a negative indicator of engagement, however this did not occur in the pilot testing. At an activity level, memorisation may not indicate disengagement because it may be a required step leading to more complex thought processes. For example, students may need to memorise an equation (or parts of it) before then applying the equation to a situation. An over-emphasis on memorisation at the course level might indicate disengagement, however for some individual activities failure to memorise might indicate disengagement.

Due to the above complications with modifying past instrument items, the items based on theory (T items) may be the safer option when measuring engagement at an activity level. This might be true at the course and institution level too, however it appears more relevant at an activity level because one activity may not invoke multiple behaviours. Additionally, T items are potentially a safer option because they are more conducive to being reduced compared to I items. I items are problematic to reduce because they are more narrow and would potentially yield very different results depending on which items are chosen.

5.10.3 THEME 3 – RESEARCH QUESTION 1 (WHAT STUDENT CHARACTERISTICS CAN INFLUENCE STUDENT ENGAGEMENT FROM ELAS?)

The results for Research Question 1 shows *International*, *ELA experience* and *Work experience* were the significant predictors of engagement found from the forward

stepwise regression results. This subsection only explores the implications of these three variables because these are the only variables included in the final model for predicting student engagement.

Based on regression results, international students are more engaged with ELAs than domestic students. Whether students are international or domestic is not something an instructor can change, but it is information the instructor generally has access to regarding their classes. Therefore, instructors can at least be aware of which students are likely to be more/less engaged and perhaps pay additional attention to getting domestic students more engaged. Since *International* was very closely related to *EAL*, it is possible *EAL* is actually driving student engagement. However, regardless of which of these variables is driving student engagement, they are not factors an instructor can practically change. Therefore, the implication of this result remains applicable if one of the other related variables is driving student engagement.

The regression results showed that the more past experience students have with ELAs, the more engaged they are likely to be with an ELA now. There is a possibility that students being inherently engaged or disengaged with university influenced their indicated level of experience with ELAs. For example, students who are generally disengaged may often not attend classes and, therefore, not have experiences many ELAs. Alternatively, students who are generally disengaged at university may simply not remember doing ELAs because they were distracted and unfocused. However, if the relationship is in fact present because experiencing ELAs more in the past improves engagement with ELAs now, this is perhaps the most practical implication for educators because it is something universities and individual educators can influence. Universities can encourage and increase the use of ELAs in early courses in order to improve student engagement with ELAs over the course of the degree. Individual educators may also increase students' engagement from ELAs through repetition within a course. If an educator knows the course introduces a new type of ELA, student engagement from the activity can be improved by introducing multiple instances of the new activity type into the course. Since ELAs have been shown to have such a wide range of benefits, being able to improve student engagement from ELAs is valuable.

Lastly, regression results show students with work experience are more engaged than students without work experience. Work experience can also potentially be influenced

by the university as a whole. If work experience is integrated into the accounting course early in the degree, students' engagement with ELAs can potentially be improved in courses following the work experience. Furthermore, it was noted there was no significant difference in student engagement between students with up to four weeks and more than four weeks work experience. Therefore, elements of accounting work experience do not have to be long to be effective in improving student engagement with ELAs. This is an important point for universities because it makes it more practical to implement work experience elements in the accounting course if they can be short.

5.10.4 THEME 4 – REDUCING THE NUMBER OF ITEMS USED TO MEASURE ENGAGEMENT

The number of items used to measure engagement will be partly driven by limits on survey space and the purpose of engagement within the research. If engagement is to be used as one of many independent variables it is more reasonable to sacrifice a lot of detail and choose a smaller scale. However, if engagement is the primary dependent variable, or even the primary independent variable of interest, then accuracy is important and a larger scale may be preferred. In accounting research, engagement is often measured using a larger scale at an institutional or course level (Malan, 2020), but not at an activity level.

Although circumstances will largely drive the choice between scales, these results provide insight regarding how much detail is lost by using fewer items when measuring engagement. This information can be used to choose between the large or small scales. When choosing a large scale, *I14* is likely the best option because it uses 66.7% of the items in *ALL* without sacrificing much detail. Both *ALL* and *I14* have a low AVE (0.40 and 0.43, respectively), but have high Cronbach's alphas (0.92 and 0.89, respectively) and Composite reliabilities (0.93 and 0.91, respectively). However, *I14* captures 93% of the variance in *ALL* and achieves almost the same significant relationships in the regression analysis.

When choosing a small scale, one of the 3 or 4 item scales should be chosen over the single item *S* wherever possible. *S* is not an unreasonable measure of engagement if there is only room for one question on engagement, but it captures notably less detail. The shared variance with using all 21 items increased from 46% using one item to at least 64% using 3 or more items. Furthermore, *S* did not capture the most significant

independent variable, *International*, in the regression results. Therefore, *S* may be used to measure engagement, but when *S* is used, the results should be interpreted with caution. In accounting research regarding ELAs, engagement has not been measured using multiple items (See Chapter 2). Some studies which only used one item (similar to *S*) might have been able to include 3 items instead of 1 to measure engagement, and the results presented above suggest this would produce more accurate results. For example, a recent study assessing student experiences with the online interactive quiz program, Nearpod, found the difference between engagement from Nearpod and paper/pen quizzes to be insignificant (Shehata, Mitry, Shawki, & El-Helaly, 2020). Although engagement was not the primary focus of the paper, engagement may have been measured more accurately, and produced a statistically significant result, if a few more items were used.

T3 and *T3S* are attractive options to measure engagement using a small number of items. Both options captured two out of three significant relationships in the regression, and *T3* achieved the highest AVE of all the available scales presented in this paper followed by *T3S*. Additionally, *T3* and *T3S* are based directly on engagement theory. On the other hand, *I3* and *I3S* come from a large bank of items with very narrow focus, which were designed to work together with other narrow items to form an overall assessment of engagement. Reducing the number of items from this larger bank is potentially problematic as it reduces the ability of the items to work together to form an impression of student engagement. Furthermore, since the *I14* items are very narrow, selecting different items when reducing the scale could potentially yield very different results. *T3* and *T3S* are not prone to these complications because the items have a broader focus. This broader focus also has the added benefit of being more universally applicable to different activities.

5.11 SUMMARY

This chapter reported the primary testing performed with the post-ELA instruments developed in chapter 5. A summary of the hypothesis testing is provided in Table 5.18 below. Qualitative data was also analysed to further explain the accepted hypotheses. Finally, this chapter discussed and explored the results framed within 4 overall themes. The following chapter will cover the development of and testing using the end of semester survey.

Table 5.18 Hypothesis Testing Results Summary.

Hypothesis number and description		Accepted or Rejected?	Explanation
H1	there is an association between a student's engagement from an ELA and the student's gender	Rejected	No significant difference between genders was found.
H2	there is an association between a student's engagement from an ELA if the student has accounting work experience	Accepted	Most significant variable in third step of the forward stepwise regression. Therefore, it was the third independent variable included in the multiple regression equation.
H3	there is an association between a student's engagement from an ELA and the student's first language	Insufficient evidence	A highly significant difference in favour of the hypothesis was found. However, the difference is no longer significant after International is introduced.
H4	there is an association between a student's engagement from an ELA and whether the student is international or domestic	Accepted	Most significant variable in first step of the forward stepwise regression. Therefore, it was the first independent variable included in the multiple regression equation.
H5	there is an association between a student's engagement from an ELA and the extent which the student has already experienced ELAs	Accepted	Most significant variable in second step of the forward stepwise regression. Therefore, it was the second independent variable included in the multiple regression equation.
H6	there is a positive association between the authenticity of an ELA and student engagement with the ELA	Rejected	Not enough evidence of consistently significant difference found.
H11	there is a positive association between an ELA being current and student engagement with the ELA	Insufficient evidence	A significant difference in favour of hypothesis was found. However, the difference is no longer significant after International is introduced.

CHAPTER 6: PHASE 2 (END OF SEMESTER SURVEY)

6.1 OVERVIEW

A new survey, which will subsequently be referred to as the end-of-semester (EOS) survey, was developed based on engagement literature and the post ELA survey detailed in Chapters 4 and 5. The EOS survey was used to collect engagement data for 34 ELAs across seven different courses in a single semester. This chapter first describes the methods (Section 6.2), which include instrument development, pilot testing, analysis methods and data cleaning. This is followed by an overview of the sample (Section 6.3) in terms of the courses, activities and students included in phase 2 of this research project. Lastly, the qualitative (Section 6.4) and quantitative results (Section 6.5) are presented followed by a discussion (Section 6.6) of these results.

6.2 METHODS

The EOS survey was developed to enable direct comparisons between students' engagement from multiple ELAs to overcome a limitation of the previous Post-ELA survey. In the Post-ELA survey, only one ELA was assessed at a time (immediately following teaching delivery) and the survey was administered for two ELAs per course. However, the data collected were anonymous, which meant an individual student's responses for two ELAs in a single course could not be matched for comparison. The EOS survey allows an individual student's responses for up to five activities to be matched for comparison, which is a statistically stronger method of comparison.

6.2.1 INSTRUMENT DEVELOPMENT

The final version of the EOS survey was a paper questionnaire administered to students to collect self-assessed student engagement data for up to 5 activities within the course. Both qualitative and quantitative data were collected using the questionnaire. The quantitative data consisted of student responses to the following: questions asking students to rate each ELA they attended on a five-point Likert-scale from 1 = 'I was very disengaged' to 5 = 'I was very engaged'; and, a question asking students to rank the five ELAs from most to least engaging. The qualitative data consisted of student responses to two open-ended questions asking students to provide the following: up to three words explaining why the ELA they found most

engaging was engaging; and up to three words explaining why the ELA they found least engaging was not engaging.

This EOS survey did not incorporate the three types of engagement, despite the fact it was informed by the Post-ELA survey detailed in Chapters 4 and 5 as well as the underlying engagement literature detailed in Chapter 2. The overall idea was to shorten the engagement section of the Post-ELA survey enough to be able to ask students about 5 activities whilst maintaining a short survey. As detailed in Chapter 5, the Post-ELA survey included both an extensive question bank containing asking about various underlying indicators of Affective, Behavioural and Cognitive engagement (AE, BE and CE), and a singular engagement question asking explicitly about engagement. The correlation between an average of all the engagement questions together and the singular engagement question was 63.6%, which shows some detail is lost by using only the singular engagement question. However, the purpose of this EOS survey is to compare ELAs, not individual students. Therefore, it is worth sacrificing some detail to enable the inclusion of more ELAs for comparison. Additionally, a large contribution to the level of detail lost between a singular engagement question and using an average of many questions is the simplicity of possible responses to the singular engagement question (i.e., the only possible data points are 1, 2, 3, 4 and 5). Since student responses will be averaged for each ELA³³, the subsequent engagement variable used in analysis will not be a simple 1, 2, 3, 4, 5 scale.

The qualitative question in the Post-ELA survey was altered for the EOS survey. The Post-ELA survey asked students to describe their experience using three words. This question's wording was partly chosen because it could capture positive or negative comments from students. However, many of the comments received were not directly relevant to students' engagement. In the EOS survey, the goal was to get both positive and negative comments from students, but specifically in relation to engagement. Therefore, the EOS survey contains two qualitative questions; the first asks students to list three words to explain why their most engaging activity was engaging and the second asks students to list three words to explain why their least engaging activity was not engaging.

³³ This will be further explained in Section 6.2.4

The EOS survey also incorporated a question asking students to rank the activities from most engaging to least engaging to complement the qualitative question above. Firstly, it primes the respondent for the qualitative question by first requiring them to think about which ELA is most and least engaging before asking them for words to explain why. Second, it clearly indicates which ELA the student is referring to in their responses to the qualitative questions for the researcher. This ranking question was also added because it is a more direct measurement of which ELA in the subset is the most engaging. Therefore, it can be used to quickly see an estimation of which activities were the most popular among students or if different students preferred different ELAs.

6.2.2 PILOT TESTING

The EOS survey was pilot tested online in the same two courses included in Phase 1 (see Chapter 5 for details). Students were invited to participate in the EOS survey by email, posts on the course's Learning Management System's site as well as fliers handed out at the end of the course's exam. The EOS survey was administered through Qualtrics and can be viewed in Table 1.1 Appendix 12:.

The first objective of this pilot test was to determine if the EOS survey could be administered online instead of face-to-face at the end of tutorials. Since the purpose of this EOS survey is to compare as many ELAs as possible, administering the survey in person for seven courses would be extremely time consuming and an online survey would, therefore, save a large amount of time with data collection and entry. A combined total of 47 students (5 and 42 for Course 1 and 2, respectively) completed the online survey before data cleaning compared with the 173 participating students³⁴ from the paper survey in the same semester in the same courses. Therefore, despite being resource intensive, these substantially lower response rates led to the EOS survey being administered in paper form face-to-face at the end of tutorials consistently with the methods employed in Phase 1 as it was deemed more instructive for obtaining higher response rates.

³⁴ 173 responses was calculated by adding together the activity with the lowest number of responses in each course to provide a conservative estimate of the number of students who responded to the paper survey. The activities in Course 1 yielded 92 and 104 responses, while the Course 2 activities yielded 92 and 81 responses.

The second objective of the pilot test was to determine the accuracy of the EOS survey's data collection by comparing the EOS survey data with the Post-ELA survey data for the activities in both surveys. Due to the online EOS survey's small sample size, this objective could not be effectively achieved, but some evidence of consistency was found for Course 2. The average responses to the question asking students to rate their engagement for the two activities in Course 2 on a scale of 1-5 in both surveys is presented in Table 6.1. The average response for each activity between the two surveys is at most 0.28 and both surveys show ELA 2.2 is slightly more engaging than ELA2.1.

Table 6.1 Comparison of responses to engagement question in Post-ELA and EOS survey

	ELA 2.1	ELA 2.2
Post-ELA survey	4.00	4.09
EOS survey	3.75	3.81

Based on the results above, the final decision regarding the EOS survey was to keep the questions in the paper EOS survey similar to the online EOS survey, but change the format to a paper questionnaire instead of online. A final version of the questionnaire can be seen in Table 1.1Appendix 13:.

6.2.3 ASSESSMENT OF ELA CHARACTERISTICS

The purpose of phase 2 is to address hypotheses 6-11, which state the hypothesized relationships between student engagement and each of the six chosen characteristics of a good ELA, respectively: *Authenticity*; *Learning Cycle*; *Critical Thinking*; *Personally Relevant*; *Detail*; and *Current*. Therefore, each ELA was rated against these criteria. Table 6.2 depicts these six criteria with the scales used to rate each one. The two researchers assessed the activities based on these six criteria independently for two courses, then compared and discussed the criteria ratings given. The maximum difference in ratings was 2 points on the 5-point scales and, after discussions, both researchers were comfortable with agreeing to settle on the mid-point between the two criteria ratings for all these instances. Therefore, each of the remaining activities were

rated against the six criteria independently by the two researchers and an average of the two criteria ratings was calculated and used in subsequent analysis.³⁵

Table 6.2 Criteria Likert Scales

Criteria	Scale	Scale description
Authenticity	5-point Likert-scale (0 – 1)	Indicates the extent to which the ELA uses a real and well-known event/company versus a clearly fictitious scenario with no attempt to resemble reality
Learning Cycle	5-point Likert-scale (0 – 1)	Indicates the extent to which the ELA incorporates all four learning cycle steps
Critical Thinking	5-point Likert-scale (0 – 1)	Indicates the extent to which the ELA emphasizes advanced critical thinking components as opposed to task completion, memorisation and clear-cut answers
Personally Relevant	5-point Likert-scale (0 – 1)	Indicates the extent to which the ELA is centred around something local and attempts to place students in a scenario where the topic would be relevant/important to them.
Detail	5-point Likert-scale (0 – 1)	Indicates the extent to which the ELA provides rich context/background information and gives more than what is strictly needed to complete the ELA as opposed to only providing the bare minimum facts required
Current	Dichotomous (0,1)	Indicates whether an ELA explicitly includes a date in the scenario which is in the last two years (1) or if the scenario is older than two years or provides no date (0)

6.2.4 ANALYSIS METHODS

As previously mentioned, the EOS survey collected qualitative data consisting of student responses to two open-ended questions asking students to provide up to three words explaining why the ELA they found most engaging was engaging; and up to three words explaining why the ELA they found least engaging was not engaging. This qualitative data was analysed using thematic analysis. More specifically, the words provided by students to explain their engagement and disengagement with activities were studied and allocated to themes. The themes were developed both deductively and inductively. The deductive themes were based on the criteria for a good ELA (Table 6.2) and were designed to help address the related hypotheses selected for this

³⁵ The maximum difference between the two researchers' criteria ratings for the remaining courses was still 2. Overall, the two researchers gave ratings with no difference 48.5% of the time, a difference of 1 between them 41.2% of the time and a difference of 2 between them 10.3% of the time. Additionally, there was no discernible pattern with one researcher rating higher than the other (out of the ratings that were different researcher 1 gave a higher rating 54.2% of the time).

study. The inductive themes were developed from the qualitative data to explore alternative reasons for student engagement and disengagement beyond the set hypotheses to better answer Research Question 2 (What ELA characteristics can influence student engagement from ELAs?).

As previously mentioned (Section 6.2.1), the relevant quantitative data consisted of student responses to questions asking students to rate each ELA they attended on a five-point Likert-scale from 1 = 'I was very disengaged' to 5 = 'I was very engaged'. This quantitative data was analysed using a multiple regression analysis with student engagement as the Dependant Variable (DV) and the criteria for a good ELA as the independent variables (IVs). Each IV was scaled from 0 to 1 so a regression coefficient provides the change in the DV if the IV changes from the lowest possible to the highest possible value. The DV equals the average student engagement for each ELA. Hence the sample size for the regressions is 34 (number of ELAs) not 557 (number of students) which is appropriate because we wish to generalize results from our sample of $n = 34$ ELAs to all ELAs rather than make conclusions about the specific 34 ELAs. Analysing the individual $n = 557$ student engagement scores would violate the regression assumption of independent observations since students are responding to the same ELA (not different ELAs with the same values for the six criteria). The criteria were placed in a regression with student engagement both individually and with all criteria together. Regressions were repeated with dummy variables for the course, but this course variable was not statistically significant and did not change the main results relating to the hypotheses.

6.2.5 DATA CLEANING

A questionnaire was handed to every student in the class and out of the 594 questionnaires distributed, 578 were returned. The high number of responses is likely due to the fact students were given a small incentive³⁶ to complete the survey and administered in person at the end of tutorials, consistent with Phase 1. From these 578 questionnaires, 21 responses were removed during data cleaning based on one of two reasons. First, 11 responses were removed because the student indicated attendance at less than two ELAs. Since the point of this data is to compare ELAs, students who attended less than two ELAs do not provide sufficient data for comparison and

³⁶ A small chocolate or lolly worth less than \$1 each.

therefore, had to be removed. Second, 10 responses were removed because more than half of the items needed for analysis were left unanswered. These incomplete responses were removed because the data would be incomplete and it potentially shows the student did not complete the survey appropriately. After data cleaning, a usable sample of 557 students (response rate of 94%) were included in subsequent analysis.

6.3 SAMPLE

6.3.1 COURSES

Seven courses were included in this study. The seven courses were all compulsory courses required to complete the Bachelor of Commerce majoring in Accounting at Curtin University. Table 6.3 provides details for each of the seven courses including a unique identifying number used in subsequent analyses, the overall topic the course falls under and what year level the course is (within the three-year accounting major). These courses were chosen to cover a wide range of ELAs in a wide range of courses to make the results more generalizable.

Table 6.3 Course Details

Course Number	Topic	Year Level
1	Introductory Economics	First
2	Management Accounting	Second
3	Business Law/Economics/Marketing	First
4	Taxation	Second
5	Management	First
6	Financial Accounting	Third
7	Accounting Information Systems	Second

6.3.2 ACTIVITIES

A total of 34 activities were included in this phase of the study. Table 6.4 provides a comprehensive list of these ELAs including a brief description of each ELA. Five ELAs from each course were included except Course 4, from which four ELAs were included. Course four only included four ELAs due to the limited number of ELAs included in the course as well as scheduling constraints when collecting the data.

Table 6.4 ELA Descriptions

ACTIVITY	DESCRIPTION
COURSE 1 (INTRODUCTORY ECONOMICS)	
1A	Learn about social dilemmas by debating different approaches to social distancing employed by two countries in response to covid-19.
1B	Learn about pay-off matrices by preparing a basic pay-off matrix based on a scenario where two programmers must decide what programming language to use on a collaborative job based on their different preferences.
1C	Learn about Nash equilibrium by interpreting a pay-off matrix based on a scenario about climate change in USA v China.
1D	Learn about prisoners’ dilemma by interpreting a pay-off matrix based on a scenario where two farmers with adjacent crops must independently decide between to pest control options.
1E	Learn about fairness and efficiency by playing a game where the student must agree how to share inheritance money with a hypothetical sibling based on a set of rules.
COURSE 2 (MANAGEMENT ACCOUNTING)	
2A	Learn about ethical responsibilities by answering questions about a scenario where a character faces multiple variations of a few ethical challenges at work.
2B	Learn about porter’s analysis of strategic competitive advantage by answering questions about a scenario where a successfully growing company is suddenly faced with a serious PR threat and a course of action must be decided.
2C	Learn about cost estimation tools by using an airline ticketing scenario to calculate and compare the advantages and disadvantages of three different cost estimation tools.
2D	Learn about job costing systems by using a plant with two different departments to calculate the cost of various jobs and evaluate decisions regarding a manufacturing overhead.
2E	Learn about inventory costing systems using a scenario of a company selling razors to prepare income statements for two different inventory costing systems then quantifying and explaining the difference between the two methods and evaluating the differences between the two methods.
COURSE 3 (BUSINESS LAW/ECONOMICS/MARKETING)	
3A	Learn about inequality measures by calculating and comparing a rich/poor ratio for multiple countries.
3B	Learn about media coverage by analyzing and discussing a graph of how many times “capitalism” was mentioned in New York Times articles between 1850 and 2015.
3C	Learn how to apply the definition of a firm by researching a list of real businesses/organizations and using the definition of a firm to decide if each one is a firm or not.

ACTIVITY	DESCRIPTION
3D	Learn about competitive advantage using the scenario of Holden's withdrawal from the Australian market to discuss what their competitive advantage was and how they could have done better to maintain it.
3E	Learn about competitive advantage and market positions by requiring students to populate a perceptual map with a selection of 5 different grocery shop brands present in the local market.
COURSE 4 (TAXATION)	
4A	Learn about income by identifying taxable income and preparing the income section of a tax return for a scenario inspired by Diana prince (wonder woman).
4B	Learn about deductions by identifying legitimate deductions and completing the deductions and income section of a tax return for a scenario inspired by Peter Parker (Spiderman).
4C	Learn about uniform capital allowances by calculating the depreciation deduction of plant and equipment using two different methods for a scenario inspired by the Hulk.
4D	Learn about capital gains tax by identifying and calculating net capital gains on a number of assets for a scenario inspired by Logan (the Wolverine)
COURSE 5 (MANAGEMENT)	
5A	Learn about similarities and differences between culture, morality and law by placing various actions on a Venn diagram of the action being acceptable according to the law, the student's culture and morality, then discussing different perspectives.
5B	Learn about racism and implications of actions in business by pretending to be a board member making decisions regarding how to deal with instances of racism in the company brought to the board's attention and discussing the feasibility and consequences of these intended decisions.
5C	Learn about the power/importance of names and self-determination by analyzing and discussing the scenario of the Washington Redskins (an American football team) changing their name.
5D	Learn about explicit racism as opposed to implicit racism by analyzing and discussing the situation around Adam Goodes (Australian football player) experiencing racism in a very public manner.
5E	Learn about skepticism with sustainability claims by researching and discussing various examples of real companies 'greenwashing' (portraying themselves as environmentally friendly when it is not really the case).
COURSE 6 (FINANCIAL ACCOUNTING)	
6A	Learn about revenue transactions by recognizing and recording the journal entries for a brief scenario whereby goods are sold from one company to another under specified delivery and payment terms.
6B	Learn about consolidations of wholly owned entities by preparing an acquisition analysis, journal entries and consolidation worksheet for a brief scenario whereby one company acquired all the issued shares of another company using a combination of cash and its own shares.

ACTIVITY	DESCRIPTION
6C	Learn about corporate governance by analyzing and discussing the situation around the CEO of HP (Mark Hurd) retrenching 15,000 workers to improve the company's performance despite its long-standing culture of employee retention.
6D	Learn about related party transactions by preparing appropriate disclosures for related party transactions presented in a brief scenario whereby a key management personnel member of a company purchases goods from the company under with various specified conditions around her employment and purchase.
6E	Learn about corporate failure by analyzing and discussing the reasons, processes and consequences of the failure, insolvency and liquidation of Dick Smith (a large Australian technology retailer).
COURSE 7 (ACCOUNTING INFORMATION SYSTEMS)	
7A	Learn about revenue business cycles by discussing and comparing observed point-of-sale systems at two very different large retailers in the local market.
7B	Learn about business process diagrams by preparing a business process diagram based on a detailed scenario about a steel factory's payroll processes.
7C	Learn about types of fraud by identifying if there any instances of five given types of fraud and explaining why the example is the relevant type of fraud.
7D	Learn about the costs vs benefits of implementing internal controls by calculating the net benefit of three internal control options taking into account the cost of implementing the controls, then discussing the results and deciding what course of action should be taken with regards to the internal controls.
7E	Learn about disaster/fire controls by identifying various possible preventative, detective and corrective controls suitable for a given scenario whereby a company's data and hardware were destroyed by a fire at their computer center which was deliberately lit by a disgruntled customer.

6.3.3 STUDENTS

Students in each course were surveyed in one of the last seven teaching weeks of the semester. The surveys were administered to students in paper form at the end of the face-to-face tutorials for the week. Table 6.5 provides a course breakdown of the number of students invited (which was equal to the number of students in attendance in the classes included in the study) and the number of surveys collected.

Table 6.5 Number of students per course

Course	Number of students invited to participate	Number of surveys collected
1	136	131
2	42	42
3	131	122
4	44	44
5	140	138
6	50	50
7	51	51
Total	594	578

The students included in the final results of this study predominantly included students completing an accounting major (59%) or other business major (36%). This is in line with expectations as the courses included in this study are all compulsory courses in the accounting major. Additionally, 47% of students were female, 89% were enrolled as domestic students (11% international students) and 93% were enrolled full time (7% part time). The relatively lower proportion of international students is also in line with expectations, due to COVID-19 hard border restrictions in place in Western Australia.

6.4 QUALITATIVE RESULTS

The emerging themes from the thematic analysis for the most engaging ELA (Table 6.6) and least engaging ELA (Table 6.7) are ordered from the most frequently occurring and includes common words provided by students for each theme. The deductive themes developed to test H6-H11 are identified with an asterisk and are bold-italicised for easier identification. The themes are all phrased in a positive version for easier comparison between the two tables despite one being for engagement and the other being for disengagement, but include both synonyms and antonyms for the word used to represent the theme. For example, the first theme in both the engagement and disengagement table is called *Interesting*, but as seen in Table 6.7 when students were asked about their disengagement *Interesting* predominantly includes antonyms to interesting (i.e., boring and uninteresting).

Table 6.6 Frequency Table of Themes from Student Reasons for Engagement

Rank	Theme	Common Words in Theme	Frequency
1	Interesting	interesting, intriguing	238 (20.1%)
2	Personally Relevant*	relevant, relatable	152 (12.8%)
3	Method of facilitation	discussion, group work, game	147 (12.4%)
4	Informative or useful	informative, useful, helpful	133 (11.2%)
5	Fun or enjoyment	fun, exciting	71 (6.0%)
6	Understandable	understandable, clear	61 (5.1%)
7	Critical Thinking*	thinking, challenging	56 (4.7%)
8	Impactful or important	eye-opening, important, thought-provoking	55 (4.6%)
9	New or Different	new, different, creative	51 (4.3%)
10	Authenticity*	real-life, realistic	52 (4.4%)
11	Subject matter or topic	sports, racism	39 (3.3%)
12	Current*	current, recent	27 (2.3%)
13	Topical or controversial	controversial, topical, culturally challenging	26 (2.2%)
14	Detail*	comprehensive, thorough, short	25 (2.1%)
15	Opinions	perspective, different opinions	14 (1.2%)
16	Prior knowledge	knew the basics, already had prior knowledge	6 (0.5%)
17	Learning Cycle*	reflective, applying knowledge	6 (0.5%)
18	Assessment	Helped in mid semester test	5 (0.4%)
19	Technology	technology involvement, use of excel	5 (0.4%)
20	Humour	laugh, sense of humour	3 (0.3%)
21	Memorable	memorable	3 (0.3%)

*Deductive themes derived from criteria for a good ELA found in the literature

Table 6.7 Frequency Table of Themes from Student Reasons for Disengagement

Rank	Theme	Common Words in Theme	Frequency
1	Interesting	boring, uninteresting	250 (28.2%)
2	Method of facilitation	slow, reading, not interactive	108 (12.2%)
3	<i>Critical Thinking*</i>	<i>simple, basic</i>	83 (9.4%)
4	Understandable	confusing, hard to understand	79 (8.9%)
5	<i>Detail*</i>	<i>long, too much information, short</i>	71 (8.0%)
6	<i>Personally Relevant*</i>	<i>unrelatable, irrelevant, distant</i>	62 (7.0%)
7	New or Different	repetitive, common, generic	47 (5.3%)
8	Memorable	not memorable, forgettable	46 (5.2%)
9	Prior knowledge	no prior knowledge, hadn't watched lecture	26 (2.9%)
10	<i>Authenticity*</i>	<i>theoretical, unrealistic</i>	21 (2.4%)
11	Subject matter or topic	content, cars, corporate	18 (2.0%)
12	Fun or enjoyment	tedious, flat, unenjoyable	15 (1.7%)
13	Informative or useful	inapplicable, useless	14 (1.6%)
14	<i>Current*</i>	<i>outdated, old</i>	12 (1.4%)
15	Impactful or important	unimportant, menial	7 (0.8%)
16	Topical or controversial	very sensitive topic, wasn't relevant to our society	4 (0.5%)
17	Opinions	disagree, forced agendas	4 (0.5%)
18	Assessment	focus on assessment	1 (0.1%)
19	Technology	time wasted using Excel	1 (0.1%)
20	Humour	N/A	0 (0.0%)
21	<i>Learning Cycle*</i>	<i>N/A</i>	0 (0.0%)

*Deductive themes derived from criteria for a good ELA found in the literature

Table 6.6 and Table 6.7 provide strong evidence for H6 (*Authenticity*), H8 (*Critical Thinking*) and H9 (*Personally Relevant*) because the relevant deductive themes were in the top ten themes of reasons for both engagement and disengagement. The frequency of students providing reasons for engagement attributable to the themes *Authenticity*, *Critical Thinking* and *Personally Relevant* were ranked 10th, 7th and 2nd out of the 21 themes, respectively. For disengagement, *Authenticity*, *Critical Thinking* and *Personally Relevant* were ranked 10th, 3rd and 6th out of the 21 themes, respectively.

In contrast, little evidence is provided for H7 (*Learning Cycle*) and H11 (*Current*) because the relevant deductive themes were in the bottom half of themes for both engagement and disengagement. The frequency of students providing reasons for engagement attributable to the themes *Learning Cycle* and *Current* were ranked 17th and 12th out of the 21 themes, respectively. For disengagement, *Learning Cycle* was

never mentioned by students as a reason for disengagement and *Current* was 14th out of the 21 themes.

The evidence for H10 (*Detail*) is more complicated. While *Detail* was the 5th highest ranked theme for disengagement, it was only the 14th highest theme for engagement. This is consistent with students not noticing a good level of detail but complaining the ELA is disengaging when the level of detail is wrong. The situation is more complicated by the fact that the theme *Detail*, unlike other themes, could be good or bad depending on whether the detail is either too much or too little. That is, the preferred direction of *Detail* is not obvious (in contrast, it is easier to argue other themes are directional, i.e., high *Authenticity* is better than low *Authenticity*). The disengagement responses related to *Detail* included more comments complaining the relevant ELA was too long (82%) than too short (18%). However, the engagement comments related to *Detail* also revolved around an ELA being detailed or comprehensive (88%) more than being short (12%). Thus, a detailed ELA can be associated with both engagement and disengagement while a short ELA is less likely to invoke engagement or disengagement. We return to this observation in the discussion.

Several inductive themes are also noteworthy from Table 6.6 and Table 6.7. First, the theme 'Method of Facilitation' was the third most prominent theme for engagement and the second most prominent theme for disengagement. Second, assessment was rarely referred to as either a reason for engagement or disengagement (ranked 18th each time). Third, the theme 'Interesting' was by far the most common theme for both engagement and disengagement. However, the same ELA can be both interesting to one student and uninteresting to another student. For example, one of the learning activities involves placing a local car brand into a perceptual map of market position among other known car brands. Of the 19 students choosing this ELA as the most engaging, 37% (7/19) provided words like 'interesting' and 'intriguing' as a reason. However, of the 21 students choosing this ELA as the least engaging, 47% (10/21) provided this theme as a reason for low engagement by providing words such as boring and uninteresting. It is likely car brand as a topic can be interesting to some students and boring to others, which impacts their engagement with the ELA.

6.5 QUANTITATIVE RESULTS

Within each course there is weak agreement among students regarding which ELA is the most and least engaging. The ELA most frequently chosen as the most engaging ELA within a course was only chosen by at most 38% of students in that course. Similarly, the ELA most frequently chosen as the least engaging ELA within a course was only selected as the least engaging ELA by at most 36% of students. This result is consistent with the qualitative results suggesting the same ELA can be engaging to one student and disengaging to another student. Nevertheless, the quantitative results below are useful to investigate which characteristics of an ELA are associated with average student engagement because in practice it is difficult to apply different activities to different students.

The dependent variable (average student engagement for the 34 ELAs) ranged from 2.93 to 3.86 (with an overall average of 3.45). This shows even the least engaging ELA on average is very close to the mid-point of the scale. Therefore, in subsequent analyses it should be noted this study's results are detecting the differences between ELAs students perceive as good and very good ELAs rather than between bad and good ELAs. The ELA students scored the highest for engagement (ELA-5A) taught them about similarities and differences between culture, morality and law by placing various actions on a Venn diagram of the action being acceptable according to the law, the student's culture and morality, then discussing different perspectives. ELA-5A scored as follows on each of the criteria on a scale from 0 to 1: *Authenticity* = 0.7; *Learning Cycle* = 0.9; *Critical Thinking* = 0.6; *Personally Relevant* = 0.5; *Detail* = 0.4; and, *Current* = 0. In contrast the least engaging ELA (ELA-7C) taught students about types of fraud by identifying any instances of five types of fraud in a fictional scenario and explaining why the chosen example is the relevant type of fraud. ELA-7A scored as follows on each of the criteria on a scale from 0 to 1: *Authenticity* = 0.3; *Learning Cycle* = 0.4; *Critical Thinking* = 0.3; *Personally Relevant* = 0.2; *Detail* = 0.6; and, *Current* = 0. While identifying different types of fraud might be important, it is not surprising that such an ELA involving a definition and recall of information is less engaging.

The six hypothesized criteria vary over most of the possible range, with three varying to both extremes of 0 and 1, however several are highly correlated (Table 6.8). In particular, *Authenticity*, *Learning Cycle*, *Critical Thinking* and *Personally Relevant* all share pairwise correlations of 0.5 or higher, so an ELA with one of these characteristics

tends to have the others as well. For example, ELAs high on the *Learning Cycle* tend to be high on Critical thinking ($r = 0.79$) as an ELA following the steps of the learning cycle—do, reflect, think, and apply (M. G. Butler, K. S. Church, & A. W. Spencer, 2019)—is more likely to require a high degree of *Critical Thinking*. On the other hand, *Detail* and *Current* are not highly correlated with each other or the other criteria.

Table 6.8 Summary statistics of the criteria scores for the 34 ELAs

Criteria	Min	Max	Correlations					
			H6	H7	H8	H9	H10	H11
H6 Authenticity	0.000	1.000						
H7 Learning Cycle	0.125	0.875	0.63					
H8 Critical Thinking	0.125	0.750	0.58	0.79				
H9 Personally Relevant	0.000	0.875	0.63	0.56	0.50			
H10 Detail	0.000	1.000	0.33	0.11	0.18	0.19		
H11 Current	0.000	1.000	-0.01	-0.44	-0.28	0.07	0.16	

Regression results show *Authenticity* ($r = 0.544$; $p = .001$) and *Detail* ($r = 0.488$; $p = .003$) are significantly correlated to engagement (Table 6.9). The regression coefficients (B) suggest changing these criteria from their lowest (0) to highest (1) possible value increases engagement by approximately half a Likert point ($B = 0.42$ and 0.51 for *Authenticity* and *Detail*, respectively). *Authenticity* ($p = 0.041$) and *Detail* ($p = 0.021$) remain statistically significant if all criteria are included in a multiple regression. Thus we find evidence in favour of hypotheses H6 (higher *Authenticity* is associated with higher student engagement) and H10 (higher *Detail* is associated with higher student engagement). In contrast, quantitative results provide no support for H11 *Current* ($r = -0.101$; $p = 0.571$).

Table 6.9 Regressions between Student Engagement and Theoretical Criteria

Independent Variable (IV)	Correlation	IVs Individually		All IVs Together	
	r	B	p	B	p
H6 Authenticity	0.544	0.42	0.001	0.37	0.041
H7 Learning Cycle	0.335	0.44	0.053	- 0.04	0.913
H8 Critical Thinking	0.281	0.41	0.108	- 0.19	0.595
H9 Personally Relevant	0.337	0.35	0.051	0.07	0.756
H10 Detail	0.488	0.51	0.003	0.40	0.021
H11 Current	-0.101	-0.05	0.571	- 0.11	0.255

*All IVs are on a scale from 0 to 1

Bold values $p < .05$

There is some evidence for H7 (*Learning Cycle*, $r = 0.335$, $p = .053$) and H9 (*Personally Relevant*, $r = 0.337$, $p = .051$) when considered individually, yet these variables are clearly statistically insignificant ($p = .913$ and $p = .756$) when all criteria are included in the regression. This suggests the relationship between engagement and the criteria of *Learning Cycle* and *Personally Relevant* might be due to their relationship with *Authenticity* (Table 6.8). A similar pattern exists for *Critical Thinking* (H8).

6.6 DISCUSSION

Table 6.10 provides a summary of the qualitative and quantitative results associated with each hypothesis in Phase 2. These findings are discussed below.

Table 6.10 Summary of Evidence for Phase 2 Hypotheses

Hypothesis	Qualitative Results	Quantitative Results
H6 Authenticity	Strong Evidence (One of the top 10 themes for engagement and disengagement)	Strong Evidence (The relationship with engagement is significant both individually and with other IVs)
H7 Learning Cycle	No Evidence (In the bottom half of themes for engagement and disengagement)	Moderate Evidence (The relationship with engagement is not strong and is better explained by other criteria)
H8 Critical Thinking	Strong Evidence (One of the top 10 themes for engagement and disengagement)	No Evidence (The relationship with engagement is not significant)
H9 Personally Relevant	Strong Evidence (One of the top 10 themes for engagement and disengagement)	Moderate Evidence (The relationship with engagement is not strong and is better explained by other criteria)
H10 Detail	Moderate Evidence (Top 10 themes for disengagement, but not for engagement)	Strong Evidence (The relationship with engagement is significant both individually and with other IVs)
H11 Current	No Evidence (In the bottom half of themes for engagement and disengagement)	No Evidence (The relationship with engagement is not significant)

Overall, *Authenticity* (H6) was the most strongly supported hypothesis because it received strong support from both the qualitative and quantitative data, suggesting student engagement is improved when an ELA is authentic. More specifically it supports the literature’s view that ELAs are better when they use a real and well-known event/company (National Society for Experiential Education, 2013, p. 1). This strong support arises not only from the common theme in the qualitative component, but also the significant relationship between engagement and authenticity in the regression. This relationship remains strong even when other criteria (*Learning Cycle*, *Critical Thinking* and *Personally Relevant*) positively correlated with authenticity are included in the regression. This strong impact of *Authenticity* on student engagement can be summarised noting that the coefficient of $B = 0.42$ (Table 6.9) means changing the authenticity of an ELA from the lowest possible (0) to the highest possible (1) increases student engagement by 0.42, almost half the range from the minimum (2.93) to the maximum (3.86) amongst these ELAs. Past research suggests using real situations for learning improves student motivation and promotes deep learning (Boyce et al., 2001; M. Butler et al., 2019; Kosnik et al., 2013; McWilliams & Nahavandi, 2006; Young et al.,

2008). Therefore, these results are in line with established ideas about the important and positive effects of authenticity in relation to ELAs.

Learning Cycle (H7) was not supported by the qualitative data and was only moderately supported by the quantitative data. For the quantitative data, although there was some evidence of a relationship between the *Learning Cycle* of an ELA and its student engagement, this appears to be a spurious relationship resulting from the correlation between the *Authenticity* of the ELA and its *Learning Cycle*. Furthermore, the variation in *Learning Cycle* for the 34 ELAs in this study was relatively low (only 0.6 out of a possible 1). With regards to the qualitative data, *Learning Cycle* is arguably a technical concept that students are unlikely to be aware of, and even if they are aware they are unlikely to provide it as a reason for engagement or disengagement with an activity. For these reasons it might be argued that this data is not capable of providing strong evidence for H7; if possible, data with ELAs possessing a higher variation in *Learning Cycle* and lower correlation between their *Authenticity* and *Learning Cycle* might be required.

Critical Thinking (H8) was strongly supported by the qualitative results, but was not supported by the quantitative results. *Critical Thinking* was a theme frequently expressed by students as both a reason for engagement and disengagement, though it was more frequently mentioned for disengagement. Thus, an ELA that is too simple might hinder engagement. With regards to the quantitative data, *Critical Thinking* was the criteria with the least variation amongst these ELAs and this might explain why it was not significantly ($p = .108$) related to engagement (the size of the effect $B = 0.41$ is similar to *Authenticity*). Similar to *Learning Cycle*, the high correlation between *Authenticity* and *Critical Thinking* in these ELAs might also explain the lack of a significant relationship.

Personally Relevant (H9) was strongly supported by the qualitative results and moderately supported by the quantitative results, suggesting an ELA that is *Personally Relevant* increases engagement. More specifically, the results provide support for the literature, which suggests ELAs are better if they are centred on something local and attempt to place students in a scenario where the topic would be relevant/important to them (McWilliams & Nahavandi, 2006; Story et al., 2020). Similar to H7 (*Learning Cycle*) and H8 (*Critical Thinking*) in the quantitative data, the strong and almost

significant effect becomes insignificant when the other criteria (especially *Authenticity*) are included in the regression, suggesting *Authenticity* is more important than *Personally Relevant*. In contrast, the qualitative results strongly support the idea of a relationship between student engagement and how personally relevant an ELA is based on the prevalence of the relevant theme in the qualitative data. This may be because students are more likely to mention a theme of personally relevant than authenticity because they are personally finding their own words to respond to this qualitative question. Further research might benefit from disentangling effects of these themes on engagement.

Detail (H10) was strongly supported by the quantitative results, providing evidence that the higher the *Detail* in an ELA the higher the engagement. This is consistent with the arguments in the literature that suggest providing rich context and extra information not required to answer the case questions can lead to deeper learning (McGuire & Whaley, 2017; Naumes, 2006; Reynolds, 1978). In contrast, an ELA that is too simple (such as involving simple definitions of fraud) are less engaging on average. However, the qualitative results provide a different and richer perspective. First, *Detail* was rarely mentioned as a reason for engagement but more commonly mentioned as a theme for disengagement, suggesting it is more important to avoid getting it wrong than exerting effort to make it perfect. More fascinating is the qualitative result that *Detail* was mentioned by 7% (88% of 8%) of students as a theme for disengagement due to the ELA being too long and providing too much information. Thus, while the quantitative results show higher *Detail* increases average engagement, the qualitative results suggest this a material minority of students find this higher level of *Detail* disengaging. Furthermore, since the qualitative data for disengagement includes comments complaining activities were too long and too short, it appears getting the right level of detail is not possible for all students. This may be because an ELA that contains too much detail will be confusing to some students.

Current (H11) was not supported by both the qualitative and quantitative results, suggesting an ELA being current does not impact student engagement. This negative result is contrary to expectations and might be because student engagement is not influenced by whether the ELA is current or historical. However, this may be due to the definition of *Current* used in this study; the explicit reference to the ELA being a recent event. Activities might not explicitly mention a date, or might be based on old historical

events, but still be related to a current issue relevant today. For example, one of the activities deals with the insolvency of a large Australian company Dick Smith. While this happened over 5 years ago, the issue of big companies becoming insolvent and how the insolvency is dealt with is still a topical issue to the students completing the ELA. Thus, the specific example being 'current' i.e. a recent event might not be as important as whether the issue is current and thus topical (this is arguably captured by other criteria such as whether the ELA is authentic or personally relevant). The allocation of words to the theme *Current* and the researchers' assessment of *Current* for each ELA was based on how current an ELA is strictly in terms of the date of the scenario used for the ELA. It is possible the scenario used for an ELA may not be a recent event but may still be engaging if it is still relevant to current issues.

In addition to the above hypotheses, three inductive themes from the thematic analysis were highlighted for further investigation as potential criteria for a good ELA. The three inductive themes are: *Interesting*; *Assessment*; and *Method of facilitation*. *Interesting* was highlighted because it is the most frequently mentioned theme for both engagement and disengagement. However, the results showed little agreement among students regarding what topics or activities were interesting, making this a difficult finding to implement in practice: what is 'interesting' to one student (e.g. car sales) might be boring to other students. Therefore, it is understandable that guidance for designing a good ELA does not address the idea of making it interesting for students, although this is clearly important in a broader context and knowing your students' interests will greatly enhance engagement.

Assessment was identified for further investigation because, in contrast with expectations, it contained so few comments (only 5 for engagement and 1 for disengagement). A common belief among educators is students primarily care about a task's relevance to assessments. Since none of these activities were directly assessed (the concepts and ideas clearly were, but not the specific ELA), this might explain assessment rarely mentioned as a theme for engagement. However, *Assessment* was even less frequently mentioned as a reason for disengagement and none of these ELAs received low average engagement scores. This suggests students value the other factors identified in the thematic analysis, such as *Authenticity*, *Critical Thinking* and *Personally Relevant*, more than whether they are assessed. This therefore explains why *Assessment* is not included in the literature's guidance for good ELAs.

Lastly, *Method of Facilitation* was identified for further investigation because it was one of the top three themes for both engagement and disengagement. The way in which an ELA is facilitated is often not explicitly included when providing guidance on designing a good ELA. Boyce et al. (2001) and Kosnik et al. (2013) are some of the few who do include an aspect of *Method of Facilitation* by incorporating interaction in their guidance. However, less than half (48%) of the words mentioned by students in this theme related to interacting; and the words related to interaction often refer to specific types of interaction such as debate, group work and discussion. As well as interaction, the *Method of Facilitation* theme includes ideas such as research, games, how the ELA was administered by the tutor, how smoothly/successfully the ELA was facilitated and the pacing of the ELA. None of these ideas are included when providing guidance for a good ELA because the focus is strongly placed on the scenario and what questions to ask students, not how to ask or answer these questions. The lack of importance placed on method of facilitation in the ELA literature may indicate a shortage of informed evidence-based research available to effectively train university teachers to be facilitators. These results suggest *Method of facilitation* is a key characteristic for an engaging ELA and should, therefore, be included in the design of a good ELA and ELA research.

6.7 SUMMARY

This chapter detailed the development and pilot testing of the End-of-semester (EOS) survey and details related to the methods used to collect and analyse the relevant engagement data. Qualitative and Quantitative data were analysed to investigate the relationships between student engagement and the six chosen characteristics of good ELA. This chapter presented the results of this analysis and discussed these results framed within Research Question 2 and the relevant six hypotheses. The following chapter will discuss the implications of the research completed in both Phase 1 and Phase 2, which will include a discussion regarding limitations and recommendations for future research.

CHAPTER 7: IMPLICATIONS AND CONCLUSIONS

7.1 OVERVIEW

Firstly, this chapter summarises the research design and key findings from Chapters 4 to 6 in Sections 7.2 and 7.3, respectively. Then the implications of these findings for accounting university educators are explored in Section 7.4. Lastly, some limitations are identified with accompanying suggestions for future research in Section 7.5. The findings of the SLR completed in Chapter 2 are not directly detailed in this Chapter because the purpose of these findings was to inform the remainder of the thesis.

7.2 THESIS SUMMARY

Figure 7.1 below provides a visual representation of the research design including the various phases of the project, the research questions (RQ) and objectives (Obj) addressed for this thesis as well as which thesis chapters (Ch) covered each step. The individual phases depicted will be further explained in the next paragraphs. Additionally, as detailed in Chapter 3, the research objectives and questions addressed in this thesis are:

Objective 1 – Develop a survey instrument to measure university accounting students' engagement from one ELA.

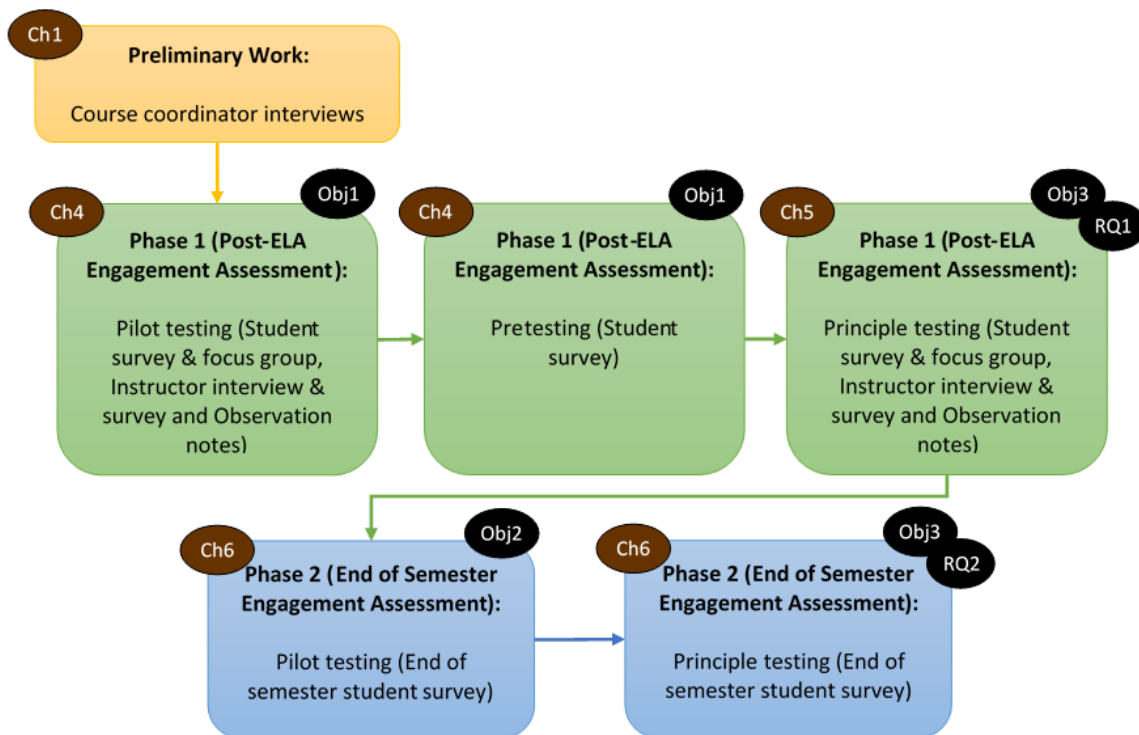
Objective 2 – Develop a survey instrument to compare university accounting students' engagement from multiple ELAs.

Objective 3 – Investigate and compare university accounting students' engagement from various ELAs.

RQ 1 – What student characteristics can influence student engagement from ELAs?

RQ 2 – What ELA characteristics can influence student engagement from ELAs?

Figure 7.1 Research Design Flow Chart



The research design of this thesis encompasses three parts: Preliminary work; Phase 1; and, Phase 2. The Preliminary work established the extent to which ELAs are used in courses completed by accounting students at Curtin University through interviews with course coordinators. It also provided information used to identify ELAs for subsequent inclusion in Phase 1 and Phase 2.

Phase 1 addressed Objective 1 and 3, which included evidence to answer Research Question 1. Phase 1 first developed and pilot tested three instruments for the purpose of the study: a student self-assessed activity level engagement instrument; an instructor interview and survey instrument; and, an observation instrument. These instruments were designed to measure student engagement in depth immediately after or at the time of completing an ELA. The student survey instrument was then used to investigate what student characteristics impact student engagement using these instruments.

Phase 2 addressed Objective 2 and 3, which included evidence to answer Research Question 2. Phase 2 first developed and pilot tested the End of Semester (EOS)

student self-assessed engagement instrument, which was designed to measure engagement for multiple ELAs in one instrument. This EOS survey was then used to investigate what ELA characteristics affect student engagement.

7.3 MAJOR CONCLUSIONS OF THE STUDY

This section will discuss the major conclusions from each of the two phases individually and will largely be framed by the objectives and research questions listed above. In order to aid this discussion see Table 7.1 below for a summary of hypothesis testing results for both phases. The table identifies all hypotheses in the first column by number and using a short label to describe the variable hypothesized to have a relationship with engagement. The level of evidence (none, moderate or strong) obtained using the Phase 1 quantitative data, Phase 2 qualitative data and Phase 2 quantitative data is summarized in the second, third and fourth columns, respectively. The level of evidence is also colour coded green, orange, red for strong, moderate or no evidence. Some conclusions extend beyond the hypotheses and, therefore, the table below (particularly related to Objective 1, Objective 2 and the qualitative data), but will be discussed in the following sections where relevant. Additionally, the following sections will also provide discussion and possible explanations for instances where one hypothesis has different levels of evidence between the data sets.

Table 7.1 Summary of Evidence for Hypotheses Based on Phase 1 and 2 Combined

Hypothesis	Phase 1 – Quantitative Evidence	Phase 2 – Qualitative Evidence	Phase 2 – Quantitative Evidence
H1: Gender (Student characteristic)	None (Relationship with engagement is not significant)	Not investigated with this data because the objective of Phase 2 was to investigate ELA characteristics	
H2: Accounting work experience (Student characteristic)	Strong (Most significant variable in third step of the forward stepwise regression)		
H3: First language (Student characteristic)	Moderate (Relationship with engagement is better explained by other criteria)		
H4: International or domestic (Student characteristic)	Strong (Most significant variable in first step of the forward stepwise regression)		
H5: Prior ELA experience (Student characteristic)	Strong (Most significant variable in second step of the forward stepwise regression)		
H6: Authenticity (ELA characteristic)	None (Relationship with engagement is not significant)	Strong (Top 10 themes for engagement and disengagement)	Strong (Relationship with engagement is significant individually and with other IVs)
H7: Learning cycle (ELA characteristic)	Not investigated with this data because the purpose of Phase 1 was to investigate Student characteristics	None (In bottom half of themes for engagement and disengagement)	Moderate (Relationship with engagement is not strong and is better explained by other criteria)
H8: Critical thinking (ELA characteristic)		Strong (Top 10 themes for engagement and disengagement)	None (Relationship with engagement is not significant)
H9: Personally Relevant (ELA characteristic)		Strong (Top 10 themes for engagement and disengagement)	Moderate (Relationship with engagement is not strong and is better explained by other criteria)
H10: Detail (ELA characteristic)		Moderate (Top 10 themes for disengagement, but not for engagement)	Strong (Relationship with engagement is significant individually and with other IVs)
H11: Current (ELA characteristic)	Moderate (Relationship with engagement is not strong and is better explained by other criteria) *Only tested combined with H6 Authenticity	None (In bottom half of themes for engagement and disengagement)	None (Relationship with engagement is not significant)

7.3.2 PHASE 1 CONCLUSIONS

The first major achievement of Phase 1 was the development of an activity level engagement instrument (Objective 1). As previously discussed in Chapter 2, the current literature only provides institutional and course level instruments (Mandernach, 2015). However, an activity level instrument is useful as it can instigate more immediate change by assisting instructors to make informed evidence based decisions regarding learning activities to include/exclude from their course. The activity level engagement instrument was initially developed by combining and adapting items from three course level instruments before items were subsequently added based on definitions of engagement. This instrument was then pilot tested and refined throughout Phase 1.

A number of interesting points emerged from the activity level engagement instrument's development process. First, discriminant validity between Affective, Behavioural and Cognitive Engagement (AE, BE and CE) was not present in this data once common method variance was removed. There is some ambiguity in the literature regarding discriminant validity between the dimensions of engagement. Some of the literature measures engagement as a single construct (simply adding the AE, BE and CE items together as a single score) and ignoring the AE, BE and CE theoretical structure for statistical analyses (Ahlfeldt et al., 2005). However, some literature on course level instruments use components of engagement as separate dependent variables in regression analyses (Appleton et al., 2006; Handelsman et al., 2005) without empirical justification they measure separate constructs. The lack of discriminant validity in this data set is interesting because it suggests these elements are potentially so intertwined it is difficult, in practice, to have one without the other two at an activity level. This data set is strictly related to activity level engagement, but in conjunction with the ambiguity in the literature it also suggests a need to include discriminant validity results for those course level instruments that don't already present.

This leads to the second interesting point: converting course level instruments to activity level instruments proved more problematic than expected. Course level instruments contain large pools of items reflecting students' specific behaviours thoughts and feelings which come together to form an overall picture of engagement. This becomes problematic because, an individual activity may not aim to incorporate all indicators of engagement within such a short space of time, unlike a course which has months to incorporate various indicators of engagement (such as being fun, interesting,

relevant to work, promote classroom discussion, etc.). This is also difficult when attempting to reduce the number of items required for an instrument which can be applied to activities in general.

Therefore, based on the obstacles of using adapted course level items to measure student engagement at an activity level, the final scales recommended to measure activity level engagement largely rely on the items developed from engagement definitions. Refer to Chapter 5 for details regarding these scales. A number of scales are presented as options based on how much detail is required and/or how many items can be used within the constraints of the future research project.

The second major achievement of Phase 1 is the investigation into student characteristics affecting student engagement (Objective 3 -> Research Question 1). The results show International/Domestic, ELA experience and Work experience were the significant predictors of engagement found from the forward stepwise regression results. More specifically, international students are more engaged with ELAs than domestic students, students with more ELA experience are more engaged with ELAs, and students with work experience are more engaged than students without work experience.

The last achievement of Phase 1 is the preliminary investigation into the ELA Characteristics Authenticity and Current and their relationship with engagement. The results showed no significant difference between engagement from real and fictional cases (which represents authenticity) and only showed significant difference in engagement from live cases and non-live cases (representing current) when it is the only IV in the regression equation. This was only a preliminary investigation because these characteristics were only measured by identifying the four activities as fictional case studies, real historical case studies and live cases. Furthermore, since there are only four activities, these results are not generalizable. However, Phase 2 investigates these ELA characteristics (along with other ELA characteristics) more precisely and rigorously. Therefore, conclusions from Phase 2 regarding these ELA characteristics will be more reliable than these Phase 1 conclusions.

7.3.3 PHASE 2 CONCLUSIONS

The first major achievement of Phase 2 was the development of a survey - done at the end of the semester (EOS) in this study - to measure student engagement for multiple ELAs (Objective 2). As discussed in Chapter 6, one survey including multiple ELAs is a valuable instrument to develop because it enables paired comparisons between ELAs even when surveys are completed anonymously. However, for this thesis, instead of paired analysis being the purpose, the EOS survey was used to collect data for as many ELAs as possible within the time, labour and course constraints. That is, engagement data for 34 ELAs was collected by administering the survey once in each course for seven courses, but if one questionnaire was required for each individual ELA (as is the case in Chapter 4 and 5), only 7 ELAs would have been included for the same amount of time invested by the researcher and students. Therefore, the development of the EOS survey is useful for comparing multiple ELAs, whether for the purpose of increasing the rigour of analyses or for including more ELAs in the analyses.

The second major achievement for Phase 2 is the investigation into ELA characteristics affecting student engagement (Objective 3 -> Research Question 2). The results (Table 7.1) show 'Authenticity' (H6) was the most strongly supported ELA characteristic because it received strong support from both the qualitative and quantitative data, suggesting student engagement is improved when an ELA is authentic. The literature's assertions regarding the importance of 'Critical thinking', 'Personally Relevant' and 'Detail' were also strongly supported by either the quantitative or qualitative results.

In contrast, little evidence was found to support the literature's assertions regarding the importance of *Current* (McWilliams & Nahavandi, 2006; Story et al., 2020) and *Learning cycle* (M. Butler et al., 2019; McWilliams & Nahavandi, 2006; National Society for Experiential Education, 2013, p. 1) as important characteristics of ELAs. *Current* was measured as a dichotomous variable based on whether or not the case explicitly included a date within two years of the current date. However, it is possible these insignificant regression results indicate a scenario being 'current' i.e. a recent event might not be as important as whether the issue the case highlights is relevant to current events and is thus topical. With the insignificant *Learning cycle* regression results, there are two possibilities identified. First there were some measurement limitations which may have impacted the results (see Chapter 6 for additional details). Alternatively, it

could be an indication that incorporating all steps of the learning cycle is not as important in an individual ELA even if it is important throughout a course.

In addition to the ELA characteristics identified for the hypotheses, the Phase 2 qualitative data also identified 'Method of Facilitation' as an important ELA characteristic that affects student engagement. The inductive theme for Method of Facilitation includes ideas such as research, games, how the ELA was administered by the tutor, how smoothly/successfully the ELA was facilitated and the pacing of the ELA. However, none of these ideas are included when providing guidance for a good ELA because the literature's focus is strongly placed on the scenario and what questions to ask students, not how to ask these questions - e.g. M. Butler et al. (2019) and McWilliams and Nahavandi (2006). These results suggest Method of facilitation is a key characteristic for an engaging ELA and should, therefore, be included in the design of a good ELA.

7.4 SIGNIFICANCE AND IMPLICATIONS FOR ACCOUNTING INSTRUCTORS

The significance of this thesis relies on the context of engagement and ELAs being important individually and in conjunction with one another. The literature (see Chapter 2) has shown ELAs can be used to achieve many learning outcomes desirable in accounting education, such as critical thinking and communication skills (Kolb, 1984, 2014). In order to experience these desirable outcomes, students must first engage with the ELA. However, the current generation of university students (Gen Z) are harder to engage in the classroom as they are known to have shorter attention spans, be more distrustful and have more of a desire for instant satisfaction (Rue, 2018; Weber & Keim, 2021). Therefore, it is more important than ever to monitor and constantly work towards improving university students' engagement in the classroom. This is particularly important for ELAs, which are so important in learning the skills required for an accounting career, but require students to engage in order to reap the benefits of the ELA.

The significance of this study does not solely rely on the unique combination of ELAs and engagement in a single research project, the way in which these two topics are investigated in this thesis are also innovative individually. For ELAs, it is an innovation to include and compare such a large number of ELAs in a single study. Most of the

current literature investigates an ELA as a stand-alone case study, compares an ELA to a traditional learning activity, or include, but does not compare, at most three ELAs. In Phase 2, 34 ELAs were compared, which is far beyond what the literature currently offers. For engagement, it is an innovation in the field of research to measure student engagement in depth at an activity level instead of a course or institutional level. As previously mentioned, this is significant because it has potential to more effectively inform more immediate change in accounting university education when universities are notorious for being slow to implement change.

Therefore, the first implication for accounting educators is the provision of two instruments to facilitate the measurement of student engagement at an activity level. This thesis has put forward multiple scales to measure student engagement for one ELA immediately after the completion of an activity. The scales range from 3-item to 14-item scales depending on the purpose and constraints of the research to be undertake. This thesis also presents an instrument to compare student engagement between multiple ELAs, most likely to be administered at the end of a semester. These instruments will enable accounting educators to improve their teaching by providing the tools to make informed evidence-based decisions regarding ELAs to include/exclude from their courses, on the basis of student engagement, in a wide variety of situations.

The Phase 1 results with the most valuable implications for accounting instructors is the fact students with more ELA experience and with accounting work experience are more engaged with ELAs. Although international vs domestic students was actually the most significant student characteristic, it is less useful for instructors because instructors cannot change whether a student is international or domestic. In contrast, if accounting educators work together, ELA experience and work experience can be altered. The ELA experience results suggest individual educators may increase students' engagement from ELAs through repetition within a course. The ELA experience results also suggest universities can encourage and increase the use of ELAs in early courses in order to improve student engagement with ELAs over the course of the degree. Similarly, the accounting work experience results suggest work experience can be integrated into the accounting course early in the degree so students' engagement with ELAs can potentially be improved in courses following the work experience.

The Phase 2 results yield some of the most practically significant implications for accounting instructors as it provides evidence to guide what type of ELAs to include for improved student engagement. It can be argued the relationships between student engagement and ELA characteristics are more impactful than the relationships with student characteristics because educators can control ELA characteristics whereas they can only react to student characteristics. The Phase 2 results show instructors should endeavour to include ELAs which use real or well-known scenarios to engage students. Additionally, ELAs should incorporate advanced critical thinking skills, be personally relevant to the student and provide the right amount of background information or detail. Lastly, instructors should pay attention to the methods used to facilitate the ELAs, incorporating interaction, games and research and considering the pacing of the ELA. These implications are very valuable for instructors because they can actually act on these implications to make tangible improvements.

7.5 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

The below subsections detail the limitations and recommendations for future research for Phase 1 and Phase 2 individually, followed by overall limitations and recommendations related to the thesis as a whole.

7.5.1 PHASE 1 LIMITATIONS AND RECOMMENDATIONS

Phase 1 has several limitations, however most of these limitations are addressed in Phase 2. The Phase 1 limitations not addressed in Phase 2 provide promising avenues for future research. The limitations of Phase 1 will be identified individually in the remainder of this section and discussed in conjunction with how the limitation has been addressed and/or could be addressed in future research.

The first limitation is the limited sample in terms of ELAs. Only four ELAs were included in the principle testing in Phase 1. This limited the generalizability of conclusions regarding any ELA characteristics. This limitation was addressed in Phase 2 by including 34 ELAs across seven courses. However, future research could further address this limitation by including a wider variety of ELAs within lectures and tutorials to see how engagement varies across different teaching formats.

Second, the lack of discriminant validity between AE, BE and CE deserves further research. It may be these elements are so intertwined it is difficult in practice to have one without the other two. The literature already contains ambiguity on this point as some course level instruments don't distinguish between AE, BE and CE (Ahlfeldt et al., 2005), whilst others distinguish between them to the point where AE, BE and CE are used as separate dependent variables in analysis (Appleton et al., 2006; Handelsman et al., 2005). Both quantitative and qualitative research could be used to better understand the lack of discriminant validity between AE, BE and CE at an activity level and whether this also exists at the course and institutional levels. Furthermore, future research could investigate how this lack of discriminant validity effects the measurement of engagement. For example, do all three elements of engagement need to be included in an activity level engagement scale?

Another limitation is the measurement of Work Experience, which was one of the significant independent variables in the final multiple regression equation. This variable was only measured approximately without capturing a lot of detail about the nature of the work experience. This was reasonable for this thesis as the study is exploratory in nature and Work Experience was only one of many independent variables investigated. However, since it was a significant predictor for student engagement, future research could investigate the relationship between work experience and student engagement in more detail. For example, a future study could investigate the extent to which student engagement is affected by the nature of the work completed (e.g. how complex or closely related the work is to the field of study), the context of the work experience (e.g. small or large office environments) or the amount of work experience gained.

Lastly, the comparison of engagement scales using shared variance emphasizes common items between ALL and the other scales so it may have a bias to the larger scales such as I14. This study mitigated this shortcoming by also comparing regression results instead of relying too heavily on the shared variance results. However, future research could use additional methods to compare these scales and subsequently improve the measurement of engagement at an activity level.

7.5.2 PHASE 2 LIMITATIONS AND RECOMMENDATIONS

'Method of Facilitation' emerged as a factor affecting student engagement and disengagement in the qualitative data, but was not included as a criteria in the

quantitative research. It was not included as a criteria for two reasons. First, the criterion was guided by past literature and method of facilitation was only represented in the literature ambiguously by individual aspects such as interaction, with more emphasis clearly placed on other factors. Second, measurement of the method of facilitation of activities is difficult because it requires observation of the activities being delivered (the other criteria can be evaluated from a description of the ELA).

Nevertheless, it is recommended future research focuses on the relationship between student engagement and method of facilitation. For example, future research could observe a smaller number of activities which cover the same or similar content, but are delivered in different ways, and measure differences in student engagement across delivery methods.

Some of the criteria used as independent variables in the quantitative data were highly correlated, making it difficult to know which criteria was driving student engagement. Therefore, future research could do an experiment analysing differences in student engagement with activities that are purposely designed to have uncorrelated criteria. For example, rather than using existing ELAs, future research might construct ELAs with all four possible combinations of low and high Authenticity and Critical Thinking equally frequent, to ensure there is no correlation between these criteria. This would require careful research design, as evidence from this study suggest ELAs that are superior tend to be superior on several criteria (possibly due to the effort exerted in their design), so designing activities that are superior on some criteria but weak on others might feel unnatural.

Little evidence was found in support of Learning Cycle and Current, but this result may be due to limitations in the measurement of these criteria. Learning Cycle was difficult for researchers to score; researchers only had access to the written information and questions provided to students and/or instructors. This highlights the need to explicitly include instructions in ELAs to facilitate the learning cycle when designing activities that other educators may use. Learning Cycle was also problematic in the qualitative data because it is a very technical topic and it is unsurprising students did not voluntarily give reasons associated with the learning cycle without any prompting to do so. With regards to Current, the quantitative assessment focused solely on the date of the scenario provided to students. Based on the qualitative data, Current is more complex than a simple date; it also encompasses how relevant the scenario is to students'

current world. Therefore, more in-depth discussion with students in the form of interviews is recommended for future research to better understand the impact of these criteria on engagement.

The literature suggests an ELA is better if it has a higher level of Detail (McGuire & Whaley, 2017; Naumes, 2006; Reynolds, 1978); however, this hypothesis deserves further research. While the quantitative results strongly support this hypothesis on average, the qualitative results suggest the situation is more complicated for individual students. It is possible higher Detail increases engagement up to a point, but if the student is relatively weak academically then an excessive level of Detail is disengaging. It is plausible that this situation would also be detrimental to other outcomes such as learning.

Due to the anonymous nature of the student questionnaire, differences and similarities between the quantitative and qualitative data could not be further explored with follow up questions. The qualitative data in particular could have benefitted from additional follow up with students to better understand student reasoning. Since students were asked to provide up to three words instead of writing a paragraph, the responses often lacked explanation or context which would be useful to better understand the bigger picture when comparing the quantitative and qualitative data. However, this exploratory study did discover potential new factors affecting student engagement with the qualitative data, even if it could not fully explain these new factors. Therefore, additional qualitative research is recommended to better understand some of the inductive themes which emerged from the qualitative data. For example, the inductive theme Assessment/Marks would benefit from further discussion with students to better understand the surprisingly small number of comments related to this theme when explaining disengagement.

A similar argument applied to the six deductive criteria. For example, in depth interviews or focus groups could be conducted to better understand what students understand by the word 'engagement' and what they think about the theoretical criteria provided for a good ELA. An earlier pilot study did ask students for more than a few words in the questionnaire but this resulted in poor response rates, and therefore the current questionnaire only requested three words. Future research is likely to be more successful with interviews and focus groups.

7.5.3 OVERALL LIMITATIONS AND RECOMMENDATIONS

First, this study's focus on engagement does not consider other important objectives/outcomes of these activities, such as technical knowledge understanding and information retention. While engagement has been depicted in the literature as an important stepping stone to many of these other desirable outcomes (Bowden et al., 2021), it is not guaranteed students who are engaged will achieve other learning outcomes (or students who aren't engaged will not achieve other learning outcomes). For example, while the quantitative research reported here found little evidence that *Critical Thinking* influenced engagement, *Critical Thinking* might show stronger relationships with students understanding the technical content being taught with the ELA. Therefore, future research should examine and compare ELAs on the basis of these other outcomes as well, not just engagement.

Second, the interaction between student and ELA characteristics' effects on student engagement could not be properly explored. This was because student and ELA characteristics were considered separately in two different phases of the research project employing different analyses methods, which made direct comparison and interaction difficult. For example the best basis for comparison would be the p-values achieved by significant student characteristics vs ELA characteristics, but the results of the comparison would be skewed by the much larger sample size³⁷ used to explore student characteristics. It would be theoretically valuable to understand what factors truly drive changes in student engagement and if engagement for students with different student characteristics are affected differently by a particular ELA characteristic. Therefore, future research is recommended to include both student and ELA characteristics in a single data set to explore comparisons and interactions between them.

Lastly, only students who attended classes were included in this study because paper surveys were predominantly used to collect student engagement data. This potentially means the sample is biased as high performing and engaged students attend virtually all classes. This bias is somewhat mitigated by the fact almost all students present in

³⁷ The regression analysis for student characteristics has a much larger sample size (minimum n = 269) than the regression analysis for ELA characteristics (n = 34) because ELA characteristics were analysed at an ELA level rather than a student level. The larger the sample size is, the more sensitive the analysis is to picking up differences in the data.

the relevant classes completed and returned a questionnaire because most classes will include a range of engaged and disengaged students. Nevertheless, this limitation means the results of this study are only relevant to students who attend class. Engaging students who do not attend class is a very different and more difficult issue, which could be a valuable avenue for future research.

7.6 CONCLUSION

This thesis made both theoretical and practical contributions regarding student engagement and ELAs. On a theoretical level, this study has added to the understanding of student engagement as a concept, particularly with regards to its application to an activity level. Furthermore, on both the theoretical and practical level, this study has provided instructors with instruments to measure student engagement at an activity level. Lastly, this study has contributed theoretically and practically by providing evidence regarding what student characteristics (International/Domestic, ELA experience and Work experience) and ELA characteristics (Authenticity, Critical thinking, Personally relevant, Detail and Method of facilitation) significantly impact student engagement.

Both Phase 1 and Phase 2 were innovative and valuable because they linked engagement and ELA research. These two fields of research are highly important on their own and, therefore, understanding the interaction between these concepts is extremely beneficial for accounting educators. Additionally, Phase 1 was innovative because the literature did not provide instruments to measure student engagement at an activity level. Phase 2 in particular was also innovative because there has not been a study investigating determinants of student engagement using such a large number of ELAs.

Furthermore, this research is very timely as university educators want to know more about how to better engage with their students. Compared with past generations, it is inherently more difficult for university educators to engage the current generation of students (Gen Z), so the more educators understand and can measure student engagement the better. This thesis provides ground-breaking evidence on what makes ELAs more engaging, which educators can use to better deal with the challenge of engaging the current cohort of students.

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APPENDIX 1: PARTICIPANT INFORMATION SHEET EXAMPLE



Student Engagement from Experiential Learning Activities **PARTICIPANT INFORMATION STATEMENT**

HREC Project Number:	HRE2019-0106
Project Title:	University Accounting Students' Engagement From Experiential Learning Activities
Chief Investigator:	Professor Ross Taplin, Dept of Audit, Assurance & Accounting Technologies
Student researcher:	Lara Gittings
Version Number:	2
Version Date:	09/08/2019

What is the Project About?

The overall research objective for this project is to compare/contrast multiple experiential learning activities (ELAs) with a focus on their effect on student engagement to determine if certain ELAs engage students more than others.

For the purpose of this study, ELAs can be defined as any learning activity which is student-centred and actively involves the student in a learning process which provides a concrete experience for students to link theory with practice. Some examples of in-class ELAs include a case study, live case, role play, labs/pracs, computer simulation and physical simulation.

Who is doing the Research?

This research project is being conducted by Lara Gittings as part of a PhD degree at Curtin University under the supervision of Prof Ross Taplin and Dr Greg White. There will be no costs to you and you will be reimbursed for your time by receiving a chocolate/lolly.

Why am I being asked to take part and what will I have to do?

We are asking you to participate in this project as you are a student enrolled in a unit for a Bachelor of Commerce majoring in Accounting. Your participation will only require you to fill in a survey which should take at most 10 minutes. You will be invited to complete the survey at the end of the class containing the relevant learning activity. The survey will ask questions regarding the learning activity relevant to this study. Apart from the time taken to complete the survey, there are no foreseeable costs associated with participating in this research project.

Are there any benefits' to being in the research project?

You will receive a chocolate at the time of completing the survey as reimbursement for your time taken to answer the questions. Furthermore, this research project hopes to improve classroom experiences in accounting at Curtin University.

Are there any risks, side-effects, discomforts or inconveniences from being in the research project?

Apart from the time taken to complete the survey, there are no further foreseeable risks or inconveniences associated with participating in this research project.

Student Engagement from Experiential Learning Activities

Who will have access to my information?

The information collected in this research will be non-identifiable. This means that information is anonymous and will not include a code number or name. No one, not even the research team will be able to identify your information. The following people will have access to the information we collect in this research: Lara Gittings, the thesis committee and, in the event of an audit or investigation, staff from the Curtin University Office of Research and Development

Will you tell me the results of the research?

Research results can be provided to you upon request. Therefore, if you would like a copy of the results from this phase of the study, please inform the researcher or request via the following email: lara.gittings@student.curtin.edu.au

Do I have to take part in the research project?

Taking part is voluntary. It is your choice to take part or not. You do not have to agree if you do not want to. If you choose not to take part, it will not affect your relationship with the University, staff or colleagues. Once you have completed and returned the survey you can no longer withdraw your survey responses because the data is collected anonymously and we therefore cannot identify your data for exclusion at that point. As the survey relates to your learning in a particular unit, please be reassured that the data collected from your completed survey is anonymous and will not have any impact on your results for that unit or any other unit. Furthermore, the unit coordinator and/or teaching staff in the unit will not have access to your responses.

What happens next and who can I contact about the research?

By completing the survey and handing it back to us you are providing implied consent to taking part in this research project. If you do not consent to participating in this research project please do not complete the survey or return it to us. Please take your time and ask any questions you have before you decide what to do. You will be given a copy of this information to keep. If you have any concerns or queries please contact the chief investigator Prof Ross Taplin by telephone: 08 9266 3033 or email: r.taplin@cbs.curtin.edu.au or the student investigator Lara Gittings by email: lara.gittings@student.curtin.edu.au.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HREC number *HRE2019-0106*). Should you wish to discuss the study with someone not directly involved, in particular, any matters concerning the conduct of the study or your rights as a participant, or you wish to make a confidential complaint, you may contact the Ethics Officer on (08) 9266 9223 or the Manager, Research Integrity on (08) 9266 7093 or email hrec@curtin.edu.au.

APPENDIX 2: POST-ELA STUDENT SURVEY V1



Student Engagement Survey

For the following table of questions please use the below scale and tick the appropriate box to answer each question.

1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Frequently; 5 = Almost all the time

<i>During this learning activity how frequently did you do each of the following:</i>	1	2	3	4	5
1. Actively take notes					
2. Ask questions when you didn't understand the instructor					
3. Contribute to a class discussion					
4. Do unrelated activities such as social media or internet browsing					
5. Participate actively in small group discussions					
6. Help fellow students					
7. Go off topic in group discussions					

For the following questions please use the below scale.

1 = Not at all; 2 = Very little; 3 = Some; 4 = Quite a bit; 5 = Very much

<i>To what extent has this learning activity emphasized each of the mental activities below:</i>	1	2	3	4	5
8. <u>Memorizing</u> facts, ideas or methods from your course material so you can repeat them in almost the same form.					
9. <u>Analyzing</u> the basic elements of an idea, experience or theory such as examining a specific case or situation in depth and considering its components.					
10. <u>Synthesizing and organizing</u> ideas, information or experiences into new more complicated interpretations and relationships.					
11. <u>Evaluating</u> the value of information, arguments or methods such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions.					
12. <u>Applying</u> theories and/or concepts to practical problems or new situations.					

Using this scale, indicate how much you agree or disagree with the statements below.

1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree

<i>During this learning activity, I... :</i>	1	2	3	4	5
13. Made an effort					
14. was focused and on task					
15. thought the learning goals were not relevant to me and my future endeavors					
16. listened carefully to the instructor when he/she was talking					
17. was interested					
18. had fun					
19. acquired/improved job related knowledge and skills					
20. was challenged to do my best work					
21. was bored and unstimulated					

Student Engagement Survey

For each of the remaining questions tick the box with the most correct response.

22. To what extent have you experienced role plays at university before this class:

- Never Once Seldom Often Almost Every class

23. To what extent have you experienced case studies at university before this class:

- Never Once Seldom Often Almost Every class

24. To what extent have you experienced physical simulations at university before this class:

- Never Once Seldom Often Almost Every class

25. To what extent have you experienced computer simulations at university before this class:

- Never Once Seldom Often Almost Every class

26. Your gender:

- Male
 Female

28. Your work experience in accounting:

- None
 1-4 weeks
 More than 4 weeks

27. Is English your first language:

- Yes
 No

29. Your student type:

- International
 Domestic

30. If there are any additional comments you would like to make with regards to the learning activity, please use the space provided below:

APPENDIX 3: BERI ENGAGEMENT OBSERVATION TEMPLATE V1



Student Engagement Observation Sheet

Observation Protocol Coversheet and Notes Page Template

Date of observation: _____ Unit name and number: _____
Instructors(s): _____ Observer's name: _____
Class time and location: _____ Class attendance: _____

1. Position of the observer in classroom (drawing a diagram may be useful):

2. Notes on classroom environment (e.g. description of space, seating arrangements, abnormal temperatures, use of technology etc.):

3. Brief description of instructional methods (e.g. Most of the class time spent on going through answers to homework questions on the board with one ELA in the middle):

4. Notes about the group of students being observed (e.g. 5/10 have a computer etc.):

Student Engagement Observation Sheet

Observe students for the portion of the class dedicated to the ELA. For each of the following criteria, indicate what proportion of observed students are engaged (E) or disengaged (D) or if you are uncertain (U) or it is not applicable to the particular learning task (NA).

	E	D	U	NA
<p>5. <u>Listening</u> Engaged behaviour: Student is listening to lecture. Eye contact is focused on the instructor or activity and the student makes appropriate facial expressions, gestures, and posture shifts (i.e., smiling, nodding in agreement, leaning forward). Disengaged behaviour: Student is not responsive to lecture. Eyes are closed or not focused on instructor or lecture material. Student is slouched or sleeping, and student's facial expressions are unresponsive to instructor's cues.</p>				
<p>6. <u>Writing</u> Engaged behaviour: Student is taking notes on in-class material, the timing of which relates to the instructor's presentation or statements. Disengaged behaviour: Student is doodling or doing unrelated written tasks when they are supposed to be listening or doing something else.</p>				
<p>7. <u>Reading</u> Engaged behaviour: Student is reading material related to class. Eye contact is focused on and following the material presented in lecture or pre-printed notes. When a question is posed in class, the student flips through their notes or textbook. Disengaged behaviour: Students are reading unrelated materials or eye content is not following the class material they are meant to be reading.</p>				
<p>8. <u>Computer Use</u> Engaged behaviour: Student is following along with lecture on computer or taking class notes in a word processor or on the presentation. Screen content matches lecture content. Disengaged behaviour: Student is surfing web, playing game, chatting online or checking e-mail.</p>				
<p>9. <u>Student Interaction</u> Engaged behaviour: Student discussion relates to class material. Student verbal and nonverbal behaviour indicates he or she is listening or explaining lecture content. Student is using hand gestures or pointing at notes or screen. Disengaged behaviour: Student discussion does not relate to class material.</p>				
<p>10. <u>Interaction with instructor</u> Engaged behaviour: Student is asking or answering a question or participating in an in-class discussion Disengaged behaviour: Student refuses to answer the instructor's questions or prompts.</p>				
<p>11. <u>Task focus</u> Engaged: Student is visibly focused on the task at hand and is not getting distracted. Disengaged: Student is working on homework or studying for another course, playing with phone, listening to music, reading non-class-related material or being distracted with other students.</p>				

APPENDIX 4: ELA DELIVERY OBSERVATION TEMPLATE V1



Learning Activity Delivery Observation Sheet

Observation Protocol Coversheet

Date of observation: _____ Unit name and number: _____

Instructors(s): _____ Observer's name: _____

Class time and location: _____ Class attendance: _____

1. Demeanour of Instructor (e.g. does the instructor seem enthusiastic or tired, does the instructor seem approachable, how controlling is the instructor etc.):

2. Order of Delivery (when in the class is the activity done, how is the activity structured etc.):

3. How is the activity introduced (e.g. to what extent is the activity and its benefits explained to students, are handouts given to students before or after the task is explained etc.):

4. What does the instructor do during the activity (e.g. does the instructor walk around or stand still, where does the instructor stand/walk, does the instructor check student progress or let them manage themselves more etc.):

APPENDIX 5: INSTRUCTOR INTERVIEW QUESTIONS V1 (FINAL)



Instructor Interview

Date and time:

Unit:

Location:

Instructor Name:

1. How do you know if students are actively engaged with a learning activity?

2. Are there any student behaviours you can identify which you believe indicate students are not actively engaged in the learning activity?

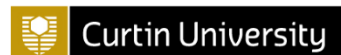
3. Do you think Experiential Learning Activities are better than Traditional Learning Activities?

Prompt a: If yes, in what ways is it better? If no, in what ways is it worse?

Instructor Interview

4. Go through survey questions verbally with the instructor (take additional notes in the margins to record any extra information given with regards to the survey questions. For example if NA is selected record why it is not applicable or if an opinion about an indicator is given record the opinion)
5. Notes regarding tangents followed during interview

APPENDIX 6: INSTRUCTOR SURVEY V1



Instructor Survey of Student Engagement

For the following table of questions, tick the appropriate box to answer each question.

<i>During this learning activity approximately what percentage of students did you observe doing each of the following:</i>	0% - 5%	6% - 35%	36% - 65%	66% - 95%	96% - 100%	NA
1. Actively take notes						
2. Ask questions when he/she didn't understand the content						
3. Contribute to a class discussion						
4. Do unrelated activities such as social media or internet browsing						
5. Participate actively in small group discussions						
6. Help fellow students						
7. Go off topic in group discussions						

Using this scale, indicate how much you agree or disagree with the following statements.
1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree

<i>I believe this learning activity... :</i>	1	2	3	4	5
8. improves students' soft skills (such as communication and critical thinking skills)					
9. effectively teaches the relevant course material					
10. is largely valuable to students					
11. engaged students more than other activities used in this unit					
12. was enjoyable to facilitate					
13. was challenging to teach					

APPENDIX 7: STUDENT FOCUS GROUP QUESTIONS V1 (FINAL)



Student Focus Group Questions

Date and time:

Unit:

Location:

1. Who was your instructor?

2. What did you think of the learning activity?

Prompt a: How interesting or enjoyable was the activity?

Prompt b: How relevant do you think the skills and knowledge taught during this activity learning activity was?

Prompt c: How challenging was the activity?

3. How engaging was the learning activity?

Prompt a: Did you and the students around you ask questions when you didn't understand things? Who did you or the students around you ask?

Prompt b: How was the small group and class discussions? Did you and the students around you participate? How much did the discussion go off topic during discussions?

Prompt c: How much did you and the students around you help each other?

Prompt d: Did you or the students around you get distracted? When did you find you got distracted and what were these distractions?

Student Focus Group Questions

4. Out of the mental activities (memorizing, analysing, synthesizing & organizing, evaluating and applying), which one do you think was emphasized the most and least by the learning activity?

Prompt a: Can you give examples of what you think portrayed these two mental activities?

5. Notes regarding any other conversations that arose during the focus group

APPENDIX 8: POST-ELA STUDENT SURVEY V2

Please answer the following questions about the learning activity you experienced today.

1. Have you completed this survey before today?

- No
 Yes (Please complete the below questions in relation to today's activity)

2. Please circle the best response for each of the following statements.

On a scale of 1 – 5, during this activity I...

a)	Was very disengaged	1	2	3	4	5	Was very engaged
b)	Thought the activity held very little value	1	2	3	4	5	Thought the activity held a lot of value
c)	Was very inactive	1	2	3	4	5	Was very actively involved
d)	Was very disinterested	1	2	3	4	5	Was very interested
e)	Used very little mental effort	1	2	3	4	5	Used a lot of mental effort
f)	Was very uninvested in the activity	1	2	3	4	5	Was very invested in the activity
g)	Was very distracted	1	2	3	4	5	Was very attentive

3. Please indicate how much you did each of the following things by circling the best response.

(1 = Never; 2 = Rarely; 3 = Occasionally; 4 = Frequently; 5 = Almost always)

During this learning activity I...

a)	Asked questions when I didn't understand the instructor	1	2	3	4	5
b)	Had fun	1	2	3	4	5
c)	Stayed focused on the activity	1	2	3	4	5
d)	Made an effort	1	2	3	4	5
e)	Applied theories and/or concepts to practical problems or new situations.	1	2	3	4	5
f)	Was interested	1	2	3	4	5
g)	Helped fellow students when they had difficulties during group discussions	1	2	3	4	5
h)	Acquired/improved job related knowledge and skills	1	2	3	4	5
i)	Evaluated the value of information, arguments or methods (such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions)	1	2	3	4	5
j)	Was bored	1	2	3	4	5
k)	Listened carefully to the instructor when he/she was talking	1	2	3	4	5
l)	Analysed the basic elements of an idea, experience or theory (such as examining a specific case or situation in depth and considering its components)	1	2	3	4	5
m)	Was challenged to do my best work	1	2	3	4	5
n)	Contributed to class/group discussion (This includes non-verbal actions such as nodding your head or raising your hand etc.)	1	2	3	4	5

Please Turn Over

4. How would you describe the learning activity you experienced today?

- Case Study (An activity where students are required to perform specified tasks for a scenario that is either made up or based on information that is older than two years)
- Live Case (A case study using a real scenario that is currently unfolding or happened in the last two years)
- I don't know

5. To what extent have you experienced the following types of activities at university before today:

Case Study: Never Once Seldom Often Almost Every class

Live Case: Never Once Seldom Often Almost Every class

6. What is your Gender?

- Male
- Female

7. Do you have work experience in accounting?

- None
- 1-4 weeks
- More than 4 weeks

8. Is English your first language?

- Yes
- No

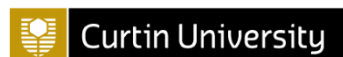
9. What is your student type?

- Domestic
- International

10. Please list up to 3 words to best describe your experience with this learning activity

Thank you for your participation.

APPENDIX 9: INSTRUCTOR SURVEY V2 (FINAL)



Instructor Survey of Student Engagement

For the following table of questions, tick the appropriate box to answer each question.

<i>During this learning activity approximately what percentage of students did you observe doing each of the following:</i>	0% - 5%	6% - 35%	36% - 65%	66% - 95%	96% - 100%	NA
1. Ask questions when he/she didn't understand the content						
2. Contribute to a class discussion (this includes non-verbal actions such as nodding or raising his/her hand etc.)						
3. Do unrelated activities such as social media or internet browsing						
4. Participate actively in small group discussions						
5. Help fellow students						
6. Go off topic in group discussions						
7. Left the room during the activity						

Using this scale, indicate how much you agree or disagree with the following statements.

1 = Strongly disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly agree

<i>I believe this learning activity... :</i>	1	2	3	4	5
8. improves students' soft skills (such as communication and critical thinking skills)					
9. effectively teaches the relevant course material					
10. is largely valuable to students					
11. engaged students more than other activities used in this unit					
12. was enjoyable to facilitate					
13. was challenging to teach					

Student Engagement from ELAs Observation Sheet

Observe students for the portion of the class dedicated to the ELA. For each of the following criteria, indicate what proportion of observed students are neutral (N), engaged (E) or disengaged (D) or if you are uncertain (U) or it is not applicable to the particular learning task (NA).

	N	E	D	U	NA	Notes
<p>7. <u>Listening</u> Engaged behaviour: Student is listening to lecture. Eye contact is focused on the instructor or activity and the student makes appropriate facial expressions, gestures, and posture shifts (i.e., smiling, nodding in agreement, leaning forward).</p> <p>Disengaged behaviour: Student is not responsive to lecture. Eyes are closed or not focused on instructor or lecture material. Student is slouched or sleeping, and student's facial expressions are unresponsive to instructor's cues.</p>						
<p>8. <u>Computer/Phone Use</u> Engaged behaviour: Student is following along with lecture on computer or taking class notes in a word processor or on the presentation. Screen content matches lecture content.</p> <p>Disengaged behaviour: Student is surfing web, playing game, chatting online or checking e-mail.</p>						
<p>9. <u>Student Interaction</u> Engaged behaviour: Student discussion relates to class material. Student verbal and nonverbal behaviour indicates he or she is listening or explaining lecture content. Student is using hand gestures or pointing at notes or screen.</p> <p>Disengaged behaviour: Student discussion does not relate to class material.</p>						
<p>10. <u>Interaction with instructor</u> Engaged behaviour: Student is asking or answering a question or participating in an in-class discussion</p> <p>Disengaged behaviour: Student refuses to answer the instructor's questions or prompts.</p>						

APPENDIX 11: POST-ELA SURVEY V3 (FINAL)

Please answer the following questions about the learning activity you experienced today.

1. Have you completed this survey before today?

- No
 Yes (Please complete the below questions in relation to today's activity)

2. Please circle the best response for each of the following statements.

On a scale of 1 – 5, during this activity I...

a)	Was very disengaged	1	2	3	4	5	Was very engaged
b)	Thought the activity held very little value	1	2	3	4	5	Thought the activity held a lot of value
c)	Was very inactive	1	2	3	4	5	Was very actively involved
d)	Was very disinterested	1	2	3	4	5	Was very interested
e)	Used very little mental effort	1	2	3	4	5	Used a lot of mental effort
f)	Was very uninvested in the activity	1	2	3	4	5	Was very invested in the activity
g)	Was very distracted	1	2	3	4	5	Was very attentive

3. Please show how much you agree/disagree with the statements below by circling the best response. (1 = Strongly Disagree; 2 = Disagree; 3 = Neutral; 4 = Agree; 5 = Strongly Agree)

During this learning activity I...

a)	Asked questions when I didn't fully understand the instructor/content	1	2	3	4	5
b)	Had fun	1	2	3	4	5
c)	Stayed focused on the activity	1	2	3	4	5
d)	Made an effort	1	2	3	4	5
e)	Applied theories and/or concepts to practical problems or new situations.	1	2	3	4	5
f)	Was interested	1	2	3	4	5
g)	Helped fellow students when they had difficulties during group discussions	1	2	3	4	5
h)	Acquired/improved job related knowledge and skills	1	2	3	4	5
i)	Evaluated the value of information, arguments or methods (such as examining how others gathered and interpreted data and assessing the accuracy of their conclusions)	1	2	3	4	5
j)	Was bored	1	2	3	4	5
k)	Listened carefully to the instructor when he/she was talking	1	2	3	4	5
l)	Analysed the basic elements of an idea, experience or theory (such as examining a specific case or situation in depth and considering its components)	1	2	3	4	5
m)	Was challenged to do my best work	1	2	3	4	5
n)	Contributed to class/group discussion (This includes non-verbal actions such as nodding your head or raising your hand etc.)	1	2	3	4	5

Please Turn Over

4. How would you describe the learning activity you experienced today?

- Case Study (An activity where students are required to perform specified tasks for a scenario that is either made up or based on information that is older than two years)
- Live Case (A case study using a real scenario that is currently unfolding or happened in the last two years)
- I don't know

5. To what extent have you experienced the following types of activities at university before today:

Case Study: Never Once Seldom Often Almost Every class

Live Case: Never Once Seldom Often Almost Every class

6. What is your Gender?

- Male
- Female
- I prefer not to answer

7. Do you have work experience in accounting?

- None
- 1-4 weeks
- More than 4 weeks

8. Is English your first language?

- Yes
- No

9. What is your student type?

- Domestic
- International

10. Please list up to 3 words to best describe your experience with this learning activity

End of survey. Thank you for your participation.

APPENDIX 12: EOS SURVEY ONLINE PILOT TEST INSTRUMENT

Engagement

This survey is in relation to the unit ACCT3004 only. Please do not complete this survey for any other unit.

Please indicate how engaged/disengaged you were during each of the following activities. Or select Not Applicable if you were not in class for the activity.

	Very Disengaged	Disengaged	Neutral	Engaged	Very Engaged	Not Applicable
Arizona Ltd and Barbados Ltd scenario (used to teach Revenue) in your week 3 tutorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Christina Ltd and Adeline Ltd scenario (used to teach consolidations - wholly owned entities) in your week 7 tutorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
HP scenario (used to teach corporate governance) in your week 9 tutorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rebecca Johnston and Northwing Compnay scenario (used to teach related party transactions) in your week 11 tutorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dick Smith scenario (used to teach corporate failure) in your week 12 tutorial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Which of these learning activities engaged you most?

Arizona Ltd and Barbados Ltd scenario
 Christina Ltd and Adeline Ltd scenario
 The HP scenario
 Rebecca Johnston and Northwing Compnay scenario
 Dick Smith scenario

Please explain why the learning activity selected above engaged you most.

Please identify the type of each learning activity using the following definitions.
Case Study (An activity where students are required to perform specified tasks for a scenario that is either made up or based on information that is older than two years).
Live Case (A case study using a real scenario that is currently unfolding or happened in the last two years)

	Case Study	Live Case	I don't know
Arizona Ltd and Barbados Ltd scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Christina Ltd and Adeline Ltd scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The HP scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rebecca Johnston and Northwing Compnay scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Dick Smith scenario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

To what extent have you experienced the following types of activities at university before?

	Never	Once	Seldom	Often	Almost every class
Case study	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Live case	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

demographics

Please indicate which class you attended for ACCT3004 this semester.

- Tuesday 10:00-11:30
- Tuesday 11:30-13:00
- Wednesday 09:00-10:30
- Wednesday 10:30-12:00
- Wednesday 14:00-15:30
- Wednesday 18:00-19:30
- Wednesday 19:30-21:00
- Thursday 12:00-13:30
- Thursday 13:30-15:00
- Thursday 16:00-17:30

What is your gender?

- Male
- Female
- I prefer not to answer

Do you have work experience in accounting?

- None
- 1-4 weeks
- More than 4 weeks

Is English your first language?

- Yes
- No

What is your student type?

- Domestic
- International

Please enter your Curtin student email address below if you wish to enter the draw for the \$100 gift card prize. Your email will not be linked to any of your responses during data analysis and only Lara Gittings will have access to your email address solely for the purpose of selecting and notifying the winner of the draw. Your email will only be entered into the draw once (if you are enrolled in multiple units included in the study, your email may be entered into the draw once per unit)

APPENDIX 13: EOS SURVEY PAPER INSTRUMENT (FINAL)

Please answer the following questions about the learning activities in this unit.



1. For each activity below, cross any boxes for activities you did not attend. Use the remaining boxes to rank each activity in order of how engaging the activity was (with 1 being the most engaging activity, 2 the next engaging, then 3, etc.).

- {Insert activity 1 name} (used to teach {insert topic} in tutorial {insert tutorial number})
- {Insert activity 2 name} (used to teach {insert topic} in tutorial {insert tutorial number})
- {Insert activity 3 name} (used to teach {insert topic} in tutorial {insert tutorial number})
- {Insert activity 4 name} (used to teach {insert topic} in tutorial {insert tutorial number})
- {Insert activity 5 name} (used to teach {insert topic} in tutorial {insert tutorial number})

2. Regarding your most engaging activity above, list 3 words to explain why it was engaging.

.....

3. Regarding your least engaging activity above, list 3 words to explain why it was not engaging.

.....

4. Circle the best response on a scale of 1-5 for each statement below (or circle "Not in Class").

a) During the {insert activity 1 name} I...

Was very engaged	1	2	3	4	5	Was very disengaged	Not in Class
Was very actively involved	1	2	3	4	5	Was very inactive	
Was very interested	1	2	3	4	5	Was very disinterested	
Used a lot of mental effort	1	2	3	4	5	Used very little mental effort	

b) During the {insert activity 2 name} I...

Was very engaged	1	2	3	4	5	Was very disengaged	Not in Class
Was very actively involved	1	2	3	4	5	Was very inactive	
Was very interested	1	2	3	4	5	Was very disinterested	
Used a lot of mental effort	1	2	3	4	5	Used very little mental effort	

c) During the {insert activity 3 name} I...

Was very engaged	1	2	3	4	5	Was very disengaged	Not in Class
Was very actively involved	1	2	3	4	5	Was very inactive	
Was very interested	1	2	3	4	5	Was very disinterested	
Used a lot of mental effort	1	2	3	4	5	Used very little mental effort	

d) During the {insert activity 4 name} I...

Was very engaged	1	2	3	4	5	Was very disengaged	Not in Class
Was very actively involved	1	2	3	4	5	Was very inactive	
Was very interested	1	2	3	4	5	Was very disinterested	
Used a lot of mental effort	1	2	3	4	5	Used very little mental effort	

e) During the {insert activity 5 name} I...

Was very engaged	1	2	3	4	5	Was very disengaged	Not in Class
Was very actively involved	1	2	3	4	5	Was very inactive	
Was very interested	1	2	3	4	5	Was very disinterested	
Used a lot of mental effort	1	2	3	4	5	Used very little mental effort	

Please turn over...

A Case Study is an activity where students are required to perform specified tasks for a scenario that is either made up or based on information that is older than two years.

A Live Case is a case study using a real scenario that is currently unfolding or happened in the last two years.

A Role Play is an activity where students are required act out a certain role while performing specified tasks for a given scenario (usually in pairs).

5. Using these definitions, would you say each activity is a Case Study or a Live Case?

{insert activity 1 name}	Case Study	Live Case	Role Play	I don't know
{insert activity 2 name}	Case Study	Live Case	Role Play	I don't know
{insert activity 3 name}	Case Study	Live Case	Role Play	I don't know
{insert activity 4 name}	Case Study	Live Case	Role Play	I don't know
{insert activity 5 name}	Case Study	Live Case	Role Play	I don't know

6. To what extent have you experienced the following types of activities at university before?

Case Study	Never	Once	Seldom	Often	Almost every class
Live Case	Never	Once	Seldom	Often	Almost every class
Role Play	Never	Once	Seldom	Often	Almost every class

7. On a scale of 1-5, how engaged were you during this unit overall?

Was very engaged 1 2 3 4 5 Was very disengaged

8. What grades have you mostly achieved at Curtin?

High distinction Distinction Credit Pass Fail

9. If you had to choose between getting a good grade and mastering the course content, which would you choose?

Good grade Mastering the course content

10. In which country did you complete the majority of your high school education?

Australia China Other. Please specify:.....

11. What is your gender?

Male Female I prefer not to answer

12. Is English your first language?

Yes No

13. How would you rate your English Language proficiency compared to other students at Curtin?

Very good Good Average Poor Very poor

14. What is your major?

Accounting {insert major for unit} Other. Please specify:.....

15. Do you have work experience in your area of study?

None up to 1 month 1 - 6 months More than 6 months

16. What is your student type?

Domestic International

17. What is your enrollment status?

Full time Part time

Thank you and enjoy your chocolate/lolly ☺