School of Education

The Impact of Constructive Alignment on the Development of Competencies in Accounting Education

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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.

Human Ethics

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 #HRE2018-0499

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ABSTRACT

For decades, accounting practitioners, professional bodies and employers have been lamenting the inadequacy of accounting students' competence in technical and non-technical areas. The emphasis on teaching discipline content knowledge in undergraduate accounting programs seems to detract from the development of other competencies. Accounting educators are encouraged to improve their curriculum and pedagogy to better prepare students with relevant competencies, yet the competence gap still exists. This concern over the development of competencies provided the motivation for this study.

This study examines the development of competencies in sub-discipline of accounting – auditing – which is classified into two categories of technical competence (audit and information technology) and four categories of non-technical competence (written communication, professional scepticism and judgement, ethics and teamwork) based on the International Education Standards (IESs) 2, 3 and 4. Using a constructive alignment framework, the study investigates the effectiveness of aligning three important components of a course design – the intended learning outcomes, the teaching-learning activities and the assessment tasks – in the development of students' competencies. Students studying in a constructively aligned auditing course are expected to have a higher-level of improvement of competence than those studying in a non-constructively aligned auditing course.

The study uses a counterbalancing two-phase mixed-methods experimental design. In each phase of the study, the experimental data collection and analysis are conducted first, followed by group interviews to help explain the experimental results. Third-year undergraduate accounting students in an auditing course are randomly assigned into two groups (Group AB and Group CD). In Phase 1, Group AB receives the constructive alignment intervention, and Group CD receives a non-constructive alignment intervention. In Phase 2, the order of interventions is reversed: Group CD receives the constructive alignment intervention, while Group AB does not. To assess the effectiveness of the constructive alignment intervention, students' improvement of competence is compared between groups.

The experimental data suggest that, in both phases, students in the constructive alignment group develop a higher level of technical and non-technical competence improvement than do students in the non-constructive alignment group. The results of group interviews confirm the usefulness of constructive alignment to develop students' competencies. Constructive alignment, if combined with authenticity in all components of constructive alignment—or 'authentic alignment', is effective in increasing students' motivation to learn and improving students' learning approach, which facilitates competence development.

This study contributes to accounting education in practice, theory and methodology. From a practical perspective, this study provides empirical evidence regarding the effect of constructive alignment on students' competence development and provides useful guidance to universities and educators to develop students' competencies. From a theoretical perspective, the study suggests that constructive alignment must be presented in an authentic manner. Authentic alignment is a customised framework found to be useful in promoting students' learning and helping students achieve the desired outcomes. From methodological perspectives, this study contributes to research by offering a novel design – a counterbalancing mixed-method experimental study.

Keywords: Accounting Education, Constructive Alignment, Technical Competence, Non-technical Competence

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LIST OF ABBREVIATIONS

AAA	American Accounting Association
AACSB	Association to Advance Collegiate Schools of Business
ACL	Audit Command Language
AEC	ASEAN Economic Community
AECC	Accounting Education Change Commission
AICPA	American Institute of Certified Public Accountants
AT	Assessment Tasks
CA	Constructive Alignment
CPA	Certified Public Accountants
CPMA	Certified Professional Management Accountant
IAASB	International Auditing and Assurance Standard Board
IAESB	International Accounting Education Standard Board
IAI	Ikatan Akuntan Indonesia (Institute of Indonesia Chartered Accountants)
IAMI	Ikatan Akuntan Manajemen Indonesia (Indonesian Institute of Management Accountants)
IAPI	Ikatan Akuntan Publik Indonesia (Indonesian Institute of Certified Public Accountants)
IASB	International Accounting Standards Board
ICAA	Institute of Chartered Accountants in Australia
IESBA	International Ethics Standards Board
IESs	International Education Standards
IFAC	International Federation of Accountants
IFRS	International Financial Reporting Standards
ILO	Intended Learning Outcomes
IMA	Institute of Management Accountants
IPSASB	International Public Sector Accounting Standards Board
MENA	Middle East and North Africa
SPAP	Standar Profesional Akuntan Publik (Professional Standard for Public Accountants)
SPSS	Statistical Package for the Social Sciences
TLA	Teaching-Learning Activities
XBRL	Extensive Business Reporting Language

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CHAPTER 1
INTRODUCTION

> Despite graduating as one of the top accounting students in my university … I experienced a large skills gap between what I knew and the non-technical competencies that were expected of me in my first professional accounting job … I thus arrived at my prestigious job never having used tax software or even having prepared a tax return by hand. Nor I had seen a set of audit work papers, from which the tax accrual is performed on the audit side … later in my career as an accounting professor … I noticed that the skills gaps persisted.
>
> The CPA Journal (Bryant, 2019, para. 2-4)

1.1 Background

Competence is the ability to perform relevant tasks to a specified standard (Borgonovo, Friedrich, & Wells, 2019), and accounting students must have a level of competence that integrates both technical and non-technical aspects (AICPA, 2018; IAESB, 2019; Lawson et al., 2014). Technical competence constitutes the core knowledge and skills for accountants (IAESB, 2019), while non-technical competence refers to a set of competencies that, within the International Education Standards (IESs), encompasses professional skills and professional values, ethics and attitude (IAESB, 2019). A strong technical competence combined with non-technical competence will prepare students for their future career (Keevy, 2020; Kunz & De Jager, 2019; Lansdell, Marx, & Mohammadali-Haji, 2020; Lawson et al., 2014; Lawson et al., 2015; Pathways Commission, 2012; Walsh, 2020). This study focuses on examining the impact of an education intervention – constructive alignment – on the development of accounting students' technical and non-technical competencies. The study investigates undergraduate level because an undergraduate degree is the gateway to the profession and only a small percentage of students study at a postgraduate level (AICPA, 2019).

For decades, professional accounting bodies, practitioners and employers have encouraged universities to better equip students with technical and non-technical competence, yet teaching and learning in accounting degrees often do not promote the development of such competence (Flood, 2014; Fouché, 2013; Yap, Ryan, & Yong, 2014). Consequently, a competence gap has been a longstanding problem in

accounting education (Bui & Porter, 2010; Khouloud & Tahar, 2020; Phan, Yapa, & Nguyen, 2020). When accounting graduates begin working, they often experience a large disparity between what they learnt in their undergraduate degree and what they are expected to demonstrate in their accounting job (Aldredge, Rogers, & Smith, 2020; Heang, Ching, Mee, & Huei, 2019).

A competence gap in accounting education does not only occur in a particular country; rather, it is a global problem (Al Mallak, Tan, & Laswad, 2020). For example, accounting graduates from Southeast Asia were found to be not well equipped by their education, indicating the failure of universities to help graduates meet workforce requirements (Phan et al., 2020). Australian employers also indicated that accounting graduates lack communication and technical competencies such as taxation and auditing (Australian Government, 2017). The American Institute of Certified Public Accountants (AICPA) reported that public accounting firms prefer to hire non-accounting graduates because of their need for graduates who are technology proficient (AICPA, 2019). Unless reform in accounting education is undertaken, fewer people will be attracted to the accounting profession and the reputation of the accounting discipline will be threatened (Albrecht & Sack, 2001; Douglas & Gammie, 2019).

One of the reasons for graduates' inadequate competence is the disparity between the activities undertaken by accountants in workplaces and the teaching provided by accounting educators in undergraduate accounting programs (Flood, 2014). Accounting education tends to emphasise discipline content knowledge and not emphasise the development of other important competencies (Lawson et al., 2014). Accounting educators perceive that, within the time allocated to teaching, it is difficult to expand the scope beyond teaching content knowledge (Lansdell et al., 2020; Sledgianowski, Gomaa, & Tan, 2017). While content knowledge is important as a basis for the development of other capabilities, such as communication and judgement, it alone does not adequately prepare students for the workplace (Borgonovo et al., 2019; Fouché, 2013; Lawson et al., 2014; The Pathways Commission, 2012; Yap et al., 2014). This issue is partly because the practice of accounting today is different to that in the past because of the proliferation of regulations and technological changes (CPA Australia, 2019; Kunz & De Jager, 2019). In the past, accountants were depicted as merely number crunchers who recorded and reported financial data, while nowadays

accountants are important in business decision-making (Flood, 2014). They must demonstrate a series of competencies, ranging from accounting-related discipline competence, such as financial accounting, auditing and information technology, to professional skills and ethics (CPA Australia, 2019; O'Connell et al., 2015; Pathways Commission, 2012). Accounting educators are expected to develop these competencies in students (AICPA, 2018; Lansdell et al., 2020; Lawson et al., 2014; Porter, 2019), yet many question how to develop students' competencies beyond discipline content knowledge (Asonitou & Hassall, 2019; Rebele & Pierre, 2019).

Several strategies for the enhancement of accounting students' competencies have been developed globally. The International Accounting Education Standard Board (IAESB) developed the IESs, which are included in the Handbook of International Education Pronouncement (IAESB, 2019). The IESs contain eight standards. More specifically, IES 1 addresses entry requirements to accounting education programs, IES 2 – 4 address initial professional development for aspiring accountants, IES 5 – 6 address the practical experience and assessment of competencies, and IES 7 – 8 cover continuing professional development for professional accountants and engagement partners. IES 2 – 4 are particularly useful for this study because they list a series of competencies and learning outcomes that students must achieve at the end of accounting education programs.

While universities are encouraged to adopt the IESs as a guide to develop students' competence to become professional accountants (Sugahara & Watty, 2016), the IESs do not provide explicit guidance regarding how to implement and develop the competencies (Ballantine & Larres, 2009). Universities are left with the responsibility to determine the most appropriate way to help students achieve learning outcomes (IAESB, 2019) and consequently various initiatives to better develop competence have been implemented. However, the initiatives seem to target certain competencies such as technology (e.g., Brown & Pike, 2010; Frownfelter- Lohrke, 2017; Santouridis, 2015; Willis, 2016), ethics (e.g., Cooper, Leung, Dellaportas, Jackling, & Wong, 2008; Fisher, Swanson, & Schmidt, 2007; Graham, 2012; Kelly, 2017; Massey & Van Hise, 2009; Mintz, 2006) or communication (e.g., Christensen, Barnes, & Rees, 2011; Graham, Hampton, & Willett, 2010; Holmes, Zhang, & Harris, 2018) rather than targeting the concurrent development of both technical and non-technical competence.

To better develop accounting students' competencies, researchers such as Lawson et al. (2015), Wessels (2010), and Willcoxson, Wynder, and Laing (2010) prioritised the need to align the components of course design, which include the intended learning outcomes, teaching-learning activities and assessment. Technical competence and non-technical competence can be integrated into core accounting courses by setting intended learning outcomes that expand the competence development beyond technical competence, and teaching method and assessment must reflect these intended learning outcomes (Lawson et al., 2015). Wessels (2010) and Willcoxson et al. (2010) also stressed the importance of aligning the objectives, teaching-learning activities, and assessment to help ensure learning. In the general education literature, this alignment principle is known as 'constructive alignment' (Biggs, 1996, 1999; Biggs & Tang, 2011).

Constructive alignment is an outcome-based learning approach that has the potential to enhance the quality of teaching and learning (Biggs, 2014; Biggs & Tang, 2011; Nightingale, Carew, & Fung, 2007; Wang, Su, Cheung, Wong, & Kwong, 2013; Zhao, 2016). In outcome-based learning, the competencies that students should demonstrate at the end of a course must be formulated before learning begins (Biggs & Tang, 2011). If the goal is to develop both technical and non-technical competence, the intended learning outcomes must explicitly state the expectation to develop these competencies. The teaching-learning activities and assessment tasks must then be designed to help students achieve these learning outcomes. The alignment among learning outcomes, teaching-learning activities and assessment tasks will enable students to engage deeply in their study; thus, students will have a better chance of achieving the desired outcomes (Biggs, 1996, 2014; Biggs & Tang, 2011; Gallagher, 2017).

Constructive alignment has been implemented in many disciplines, especially those with a professional orientation, such as nursing, marketing and social work (Joseph & Juwah, 2012; Teater, 2011; Treleaven & Voola, 2008). It has been reported to have a positive impact on students' perceived development of competencies (Dean, Perkiss, Simic Misic, & Luzia, 2018; Joseph & Juwah, 2012; Larkin & Richardson, 2013; Lui & Shum, 2012; Treleaven & Voola, 2008). Constructive alignment facilitates the improvement of students' learning approaches (Lawson, 2011; Wang et al., 2013) and enhances students' motivation to learn (Kumpas-Lenk,

Eisenschmidt, & Veispak, 2018; Lawson, 2011). Students who study in a more constructively aligned course are more likely to have a deep learning approach and higher motivation to learn than students in a less constructively aligned course (Lawson, 2011).

While positive outcomes from the implementation of constructive alignment have been reported in the literature, similar studies in accounting education are limited (Gunarathne, Senaratne, & Senanayake, 2019; van Rooyen, 2020). Thus, it remains unclear whether constructive alignment can enhance the development of non-technical competence while also maintaining the quality of technical competence. To address this gap in the accounting literature, this research explored the relationship between accounting educators' adoption of constructive alignment and its impact on the development of students' technical and non-technical competence. This study examined the development of competencies in the field of auditing, as auditing is a sub-discipline of accounting that is frequently criticised in the literature (Flood, 2014; Setyaningrum, Muktiyanto, & Hermawan, 2015; Suryani, 2018). Improving the quality of learning in an auditing course is necessary because auditing instructors often experience difficulties in developing competence beyond content knowledge because of the vast quantity of content that must be covered in auditing courses (Sledgianowski et al., 2017). The study examined two categories of technical competence (audit and information technology) and four categories of non-technical competence (written communication, professional scepticism and judgement, ethics and teamwork).

1.2 Purpose of the Study

The purpose of this study was to examine whether students' technical and non-technical competence in an auditing course could be improved by implementing constructive alignment. The overarching research question was: does the adoption of constructive alignment in an auditing course facilitate the development of accounting students' competencies?

The following research questions were generated to break down the overarching research question:

1. Do students studying in a constructively aligned auditing course have a higher level of technical competence improvement than those studying in a non-constructively aligned auditing course?
2. Do students studying in a constructively aligned auditing course have a higher level of non-technical competence improvement than those studying in a non-constructively aligned auditing course?
3. How do students perceive the impact of studying in a constructively aligned auditing course on their competence development?

To answer the research questions, this study used a counterbalancing two-phase mixed-methods experimental design, which involved experiment and group interview methods in each phase. The experimental data were used to answer the first and second research questions, while the group interview was intended to answer the third research question and help explain the experimental results.

1.3 Significance of the Study

This study is significant to accounting education because it provides empirical evidence regarding the effect of constructive alignment on students' competence development. Researchers have claimed that aligning learning outcomes with teaching and learning processes and assessment – or constructive alignment – will facilitate the development of students' competencies (Lawson et al., 2014; Lawson et al., 2015; Wessels, 2010; Willcoxson et al., 2010). However, it remains unclear whether adoption of constructive alignment in accounting classrooms would result in positive impacts on students' development of technical and non-technical competence. Therefore, research on constructive alignment in accounting education is of value (Gunarathne et al., 2019; van Rooyen, 2020).

This study could contribute to changing the practice of accounting education. While numerous calls for change have appeared in the accounting education literature, no explicit guidance is available to assist accounting educators who are interested in competence development. A goal of this study is to support accounting educators by demonstrating how to embed technical and non-technical competence into core accounting courses using the framework of constructive alignment. With appropriate alignment of different components within course design, accounting

educators may be able to influence students' approaches to learning accounting and subsequently help students develop competencies. Accordingly, the competence gap in accounting education could be reduced.

The use of experimental design in the present study addresses the call from accounting education scholars to identify the best way to develop accounting students' competencies and provide evidence of its effectiveness (Apostolou, Dorminey, & Hassell, 2020; Apostolou, Dorminey, Hassell, & Watson, 2013; Rebele & St. Pierre, 2015). Many studies have focused on reporting the views among accounting stakeholders of the importance of technical and non-technical competence (e.g., Abayadeera & Watty, 2016; Bierstaker, Burnaby, & Thibodeau, 2001; Camacho, 2015; Crawford, Helliar, & Monk, 2011; Dolce, Emanuel, Cisi, & Ghislieri, 2020; Frecka & Reckers, 2010). Despite the value of these prior studies, Apostolou et al. (2013) highlighted that future research in accounting education must focus attention towards identifying the best ways to develop students' competencies, rather than just identifying the importance of competencies (Apostolou et al., 2013). Further, accounting education research has been criticised for the low number of empirical works that employ experimental designs, over-reliance on survey data and using a proxy of students' perceptions to assess the effectiveness of a strategy (Apostolou et al., 2020; Rebele & St. Pierre, 2015). Apostolou et al. (2020) stated that accounting education research should reveal the factors and pedagogical innovations that influence students' learning outcomes. They recommended using an experimental design, such as a pre-test/post-test design or other appropriate experimental design, that can capture the success or failure of educational interventions in accounting. Although experimental design is difficult to execute, this is the best way to know if an educational intervention is effective (Apostolou et al., 2020).

This study is significant to the constructive alignment literature because it addresses many important issues not addressed by past studies. While researchers have documented the positive impact of implementing constructive alignment (e.g., Joseph & Juwah, 2012; Larkin & Richardson, 2013; Treleaven & Voola, 2008), their research designs did not consider the influence of moderating variables, such as different teaching staff members, on the implementation of constructive alignment (Larkin & Richardson, 2013). The present study controlled factors outside of the constructive alignment that could affect the findings. Moreover, the indicators for successful

implementation of constructive alignment in prior studies were mostly derived from students' perspectives (e.g., Larkin & Richardson, 2013; Lawson, 2011; Teater, 2011; Wang et al., 2013; Zhao, 2016). To gain a more accurate understanding of students' development of competence, the use of an objective measure of students' achievement is warranted (Wang et al., 2013). Therefore, this study measured students' competencies through the use of both subjective and objective mechanisms (self-assessed competence questionnaire and test). In addition, prior research did not explore students' ongoing learning experience and performance after their exposure to constructive alignment. This study's counterbalancing experimental design helps to examine whether ongoing support is needed to ensure continuity of competence development.

1.4 Context of the Study

This study was conducted in Indonesia – the largest economy in Southeast Asia and the world's tenth-largest economy (Maradona & Chand, 2018; The World Bank, 2020). The number of accounting jobs in Indonesia is growing rapidly as a result of global business demands and regional autonomy (Utami, Priantara, & Manshur, 2011). Despite the strong demand for accountants, Indonesia continues to experience a shortage of qualified accountants.

Compared with other Southeast Asian countries, the ratio per capita of qualified accountants in Indonesia is the lowest (Cahyadi, Andayani, & Suryaningrum, 2019; Suryani, Helliar, Carter, & Medlin, 2018; Utami et al., 2011). For example, 2020 data indicated only 1,422 public accountants or auditors in Indonesia (Indonesian Institute of Certified Public Accountants, 2020). However, at least 226,780 organisations (government, business, and not-for-profit organisations) require public accountants to audit their financial statements each year (Avianti, 2015). Thus, the supply of qualified accountants is far behind the demand for accounting and audit services. One outcome of the shortage of local accountants is the high number of overseas accountants working in Indonesia through Big 4 accounting firms (Zoraifi, 2015). In turn, this makes the job market more competitive for local graduates. There is a need to increase the number of qualified accountants by increasing the quality of accounting education.

Since 2012, all university degree programs in Indonesia have been required to change their orientation from knowledge-based to competence or outcomes-based (Pratama, 2017). This means there must be a minimum standard of competence to provide quality assurance for higher education outcomes (Pratama, 2017). Indonesia's professional accounting body, the Institute of Indonesia Chartered Accountants (IAI), encourages university accounting programs to adopt the IESs so that the competencies and learning outcomes will match market expectations (Gani, 2020). However, similar to the problem in other countries, research continues to indicate that Indonesian accounting graduates lack relevant competencies (Adhariani, 2020; Phan et al., 2020; Prayanthi & Nelwan, 2019).

A common criticism of Indonesian accounting education is the overemphasis on teaching theoretical content knowledge and minimal support for accounting students to develop their competence beyond accounting knowledge (Machfoedz, 1997; Setyaningrum et al., 2015; Suryani, 2018). Practitioners and employers in Indonesia have voiced the importance of transforming the Indonesian accounting curriculum and pedagogy, especially in terms of the practical aspects of accounting (Pratama, 2015; Setyaningrum et al., 2015; Suryani, 2018), information technology (Wulandari & Ali, 2019), communication (Adhariani, 2020; Phan et al., 2020; Prayanthi & Nelwan, 2019), teamwork (Prayanthi & Nelwan, 2019), professional scepticism and judgement (Fatmawati, Mustikarini, & Fransiska, 2018; Karlina & Shauki, 2019) and ethics (Karlina & Shauki, 2019; Prayanthi & Nelwan, 2019). It seems that accounting programs in Indonesia still struggle to satisfy the need to produce quality graduates (Utami et al., 2011). Despite the importance of constructive alignment to help students achieve the desired competencies, no empirical data on the implementation of constructive alignment in Indonesian accounting education could be found.

1.5 Organisation of Thesis

This thesis comprises six chapters. This chapter has introduced the background, purpose, significance and context of the study. Chapter 2 provides a literature review related to the classification of competence in accounting education, the competence gap, competence development strategies, constructive alignment and

accounting education in Indonesia. Chapter 3 describes the methodology used in the study, including the epistemological assumption underpinning the mixed-methods research, followed by a description of the research design, the study's validation techniques and ethical issues. Chapter 4 provides the findings of the study, which is divided into two parts: the findings of the quantitative data and the findings of the qualitative data. Chapter 5 discusses the results presented in the previous chapter. The final chapter, Chapter 6, presents the summary of the study results, the study contributions, implications, limitations and recommendations for future research.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

This chapter provides a detailed review of the relevant literature related to the issue of competence in accounting education. Accounting education is multidimensional term that refers to programs or activities aimed at educating students in the accounting field (Flood, 2014). Multidimensional means that accounting education can be provided at various levels of education and various sub-disciplines (Flood, 2014). In this chapter, the discussion of accounting education emphasises education in higher education – especially at the undergraduate level.

Given that the purpose of this study was to examine whether students' competence can be effectively developed through constructive alignment, the chapter is organised into the following sections. Section 2.2 reviews the literature on the classification of competence in accounting education. Section 2.3 describes the competence gap in accounting education, which is discussed in two categories: the gap in technical competence and the gap in non-technical competence. Section 2.4 discusses literature on the strategies to develop competencies. Section 2.5 discusses the potential of constructive alignment to develop competencies, while Section 2.6 reviews accounting education in Indonesia. Finally, Section 2.7 summarises the literature review in this chapter.

2.2 Classification of Competence in Accounting Education

There has been a paradigm transition in education from knowledge-oriented to competence-oriented (Boritz & Carnaghan, 2017). The former paradigm placed emphasis on transmission of knowledge, while the new paradigm focuses on developing competence rather than just knowledge (Borgonovo et al., 2019; Boritz & Carnaghan, 2017). Competence is defined as the ability to perform relevant tasks to a specified standard (Borgonovo et al., 2019). Lawson et al. (2014) defined competence as 'the set of knowledge, skills, and abilities required for professional success in accounting'. This definition is similar to the definition of competence provided by

Aldredge et al. (2020), who described that the scope of competence is broader than the acquisition of knowledge – competence must include the integration of knowledge with skills and abilities to perform a role well (Aldredge et al., 2020).

Competence is advocated in education because society needs graduates who can demonstrate relevant competencies (Mulder & Winterton, 2017). The paradigm of competence-based education has gain much interest to overcome the gap between education and workplaces (Mulder & Winterton, 2017). In accounting education, competence-based education is necessary as it develops professional competence across a wide range of technical and non-technical competencies, allowing accounting graduates to succeed in their profession (Borgonovo et al., 2019; IAESB, 2019). Increasing the competence of accounting graduates to make and audit financial information means increasing the quality of financial information which in turn provides confidence for investor to make informed economic decision making for sustainable economic growth (Borgonovo et al., 2019).

Although the paradigm of competence-based education has been adopted by accounting programs around the world, but the practice of accounting teaching and learning in the classrooms are generally still knowledge-oriented (Borgonovo et al., 2019; Fouché, 2013; Pincus, Stout, Sorensen, Stocks, & Lawson, 2017; Yap et al., 2014). As a result, accounting graduates are often considered not ready to fulfil the demand of workplaces (Bui & Porter, 2010; Khouloud & Tahar, 2020; Phan et al., 2020). Introducing competence-based education requires students to step out of their comfort zone, away from memorising textbooks to become active knowledge seeker who are eventually able to apply and innovate their knowledge to suit their work context (Al-Htaybat, von Alberti-Alhtaybat, & Alhatabat, 2018; Mulder & Winterton, 2017). For faculty members, adopting competence-based education requires them to design education programs that match to market needs (Mulder & Winterton, 2017). These include developing students' competencies beyond content knowledge (Dellaportas, 2019; Lawson et al., 2015; Tan & Laswad, 2018), designing authentic learning activities, creating assessment that tests students in applying their knowledge and skills in a relevant context, instead of testing memory (Borgonovo et al., 2019), and incorporating current technology in the curriculum (Chan, Chiu, & Vasarhelyi, 2018).

The detailed classification of competence necessary to become an accountant can be found in the IESs. The IESs were developed by the IAESB to provide guidance for any accounting education institution implementing competence-based education (Borgonovo et al., 2019). Another objective of developing the IESs was to create uniformity in the quality of accounting education around the world (Sugahara & Watty, 2016). The IAESB encourages accounting programs to use the IESs as a guide to develop graduates' competencies (Sugahara & Watty, 2016).

According to the IESs (IAESB, 2019), accountants are expected to master three areas of competence: technical competence (IES 2), professional skills (IES 3) and professional values, ethics, and attitudes (IES 4). As shown in Table 2.1, this classification of competence is quite different from other major competence frameworks in accounting education, such as the AICPA pre-certification core competency framework (AICPA, 2018) and the competency integration framework (Lawson et al., 2014). However, a general pattern in these competence frameworks is the two domains of competence: technical competence and non-technical competence.

Table 2.1 Classification of Competence in Accounting Education

	IESs (IAESB, 2019)	**Pre-certification Core Competency Framework** (AICPA, 2018)	**Competency Integration Framework** (Lawson et al., 2014)
Technical competence	**Technical competence (IES 2)** • Financial accounting and reporting • Management accounting • Finance and financial management • Taxation • Audit and assurance • Governance, risk management and internal control • Business laws and regulations • Information technology • Business and organisational environment • Economics • Business strategy and management	**Accounting competencies** • Risk assessment, analysis, and management • Measurement analysis and interpretation • Reporting • Research • System and process management • Technology and tools	**Accounting competencies** • External reporting and analysis • Planning, analysis and control • Taxation, compliance, and planning • Information systems • Assurance and internal control • Professional values, ethics and attitudes

Non-technical competence	**Professional skills (IES 3)** • Intellectual • Interpersonal and communication • Personal • Organisational	**Business competencies** • Strategic perspective • Global and industry perspectives • Process and research management • Governance perspective • Customer perspective	**Foundational competencies** • Communication • Quantitative • Analytical thinking and problem solving • Interpersonal • Technological
	Professional values, ethics, and attitudes (IES 4) • Professional scepticism and professional judgement • Ethical principles • Commitment to the public interest	**Professional competencies** • Ethical conduct • Professional behaviour • Decision-making • Collaboration • Leadership • Communication • Project management	**Broad management competencies** • Leadership • Ethics • Process management and improvement • Governance, risk and compliance • Additional core business competencies

The term 'technical competence' refers to 'the ability to apply professional knowledge to perform a role to a defined standard' (IAESB, 2019, p. 23). Professional knowledge itself is defined as 'those topics that make up the subject of accountancy as well as other business disciplines that, together, constitute the essential body of knowledge for professional accountants' (IAESB, 2019, p. 22). These definitions imply that, to be technically competent, accounting students must be able to apply the discipline-specific knowledge that is important to become an accountant. Constituting the core knowledge and skills for accountants (IAESB, 2019), technical competence is called 'accounting competencies' within the AICPA's core competency framework and the competence integration framework from Lawson et al. (2014).

The term 'non-technical competence' refers to a set of competencies that are not subject specific, yet are essential to integrate with technical competence for employability purposes (Chaffer & Webb, 2017; Keevy, 2020). Within the IESs, non-technical competence encompasses professional skills (IES 3) and professional values, ethics and attitude (IES 4) (IAESB, 2019). Within the domain of non-technical competence, the AICPA core competency framework and Lawson's competency integration framework include business and professional competencies, and foundational and broad management competencies (AICPA, 2018; Lawson et al., 2014). In the accounting education literature, non-technical competence is also referred to as generic skills (Abayadeera & Watty, 2016; Al Mallak et al., 2020; Lim,

Cham, Lee, & Ramalingam, 2019), employability skills (Bowles, Ghosh, & Thomas, 2020; Tan & Fawzi, 2017), professional skills (Kunz & De Jager, 2019), pervasive skills (Keevy, 2020), and soft skills (Dolce et al., 2020; Raimee & Radzi, 2020).

The technical and non-technical competencies investigated in the present study were based on IESs (IES 2 – 4). This choice is justified by the fact that these standards were developed by IAESB, the global standard setter in accounting education, and they present the learning outcomes for each competence area that accounting students must achieve (IAESB, 2019; Khouloud & Tahar, 2020). Since the IESs have been updated regularly by the IAESB to address market expectations, it is assumed that the competence areas in the IESs are still relevant and necessary for educating current and future generation of accountants. However, Chatterjee and Eddie (2017) argued that the competencies developed in the core accounting subject such as accounting, auditing, taxation, as we know and define today might be less beneficial to educate the next generation of accountants who must engage in the culture of business innovation. Business innovation is the key driver for improving the performance and sustainability of economy (Chatterjee & Eddie, 2017). Hence, if the goal is to develop capabilities required to adapt and excel in the culture of business innovation, accounting programs must radically reconsider the current list of competencies and core accounting subjects (Chatterjee & Eddie, 2017).

2.3 Competence Gap in Accounting Education

The competence gap is an ongoing issue in accounting education. The competence gap refers to the gap between the competence required by employers and the competence acquired by accounting graduates (Bui & Porter, 2010; Khouloud & Tahar, 2020; Phan et al., 2020). Although the supply of accountants (number of accounting graduates) and demand for accountants globally are strong, there is evidence that accounting graduates lack the competencies deemed important by the profession. For instance, Australian statistics show that supply and demand for accountants continues to grow (Australian Government, 2019); however, employers continue to report difficulties in recruiting good quality accountants (Australian Government, 2019). Employers indicate that most applicants are regarded unsuitable

because of inadequate competence in taxation, auditing and assurance, and communication (Australian Government, 2019).

Likewise, the number of accounting graduates in the United States (US) is high (AICPA, 2019). Demand for accountants is also strong and is estimated to grow by 6% from 2018 to 2028, which is faster than the predicted growth percentage of any other occupation in the country (U.S. Bureau of Labor Statistics, 2020). However, the public accountant community has indicated that, especially in terms of technological competence, non-accounting graduates are considered more competent than accounting graduates (AICPA, 2019). As a result, public accounting firms display a preference for hiring candidates from non-accounting backgrounds (AICPA, 2019).

Graduates' competence gap problem has been addressed by major reports in accounting education going back at least four decades (Kotb, Abdel-Kader, Allam, Halabi, & Franklin, 2019; Kunz & De Jager, 2019). For example, in the US, the Cohen Report (1978), Bedford Committee Report (1986), Big Eight White Paper (1989), report by Albrecht and Sack (2000), and Pathway Commission Report (2012) are major publications urging reform in US accounting education (Flood, 2014; Needles, 2014; Pierre & Rebele, 2014). The Cohen Report was published in 1978 by the former leader of the Securities and Exchange Commission (Needles, 2014). The report stated that accounting educators and practitioners did not have strong collaboration skills to improve the quality of accounting education. Practitioners did not share relevant information with educators to keep accounting education updated with the needs of profession practice. The Cohen Report suggested accounting education imitate the education model in the legal and medical professions, where practitioners and educators work together to develop students' competence.

The Bedford Committee Report was published in 1986 by the American Accounting Association (AAA). It identified the problem in accounting education as the gap between 'what accountants do and what accounting educators teach' (Flood, 2014, p. 83). The report claimed that educators did not teach students the competencies deemed important in the profession. As a result, graduates experienced difficulties in adapting to the workplace. The Bedford Committee Report recommended accounting programs adopt curriculum and pedagogy that enable students to develop the necessary competencies.

In 1989, a White Paper was issued by managing partners of the Big Eight accounting firms in the US (Flood, 2014; Needles, 2014). This paper provided recommendations, such as the need to develop students' competence in areas such as writing and ethical awareness, and the need to provide students with the authentic learning experience that students may face in the profession (Needles, 2014). To follow up on their recommendations, the Big Eight and AAA spent around US$4 million to establish the Accounting Education Change Commission (AECC). The mission of the AECC was to facilitate change in accounting education with the goal of improving accounting graduates' competence, as demanded by the profession. The AECC provided guidance for educators around instructional methods and awards grants for universities to redesign their accounting programs to reflect the objectives of the AECC (Flood, 2014).

Albrecht and Sack (2001) published a report titled 'Accounting Education: Charting the Course through a Perilous Future'. This report has received wide attention by the accounting education literature over the past two decades (Pierre & Rebele, 2014). Consistent with the previous reports that criticised accounting education, Albrecht and Sack argued that accounting as a discipline was in danger of extinction unless a reform occurred. The report suggested that accounting education must provide opportunities for students to learn more than technical accounting knowledge. Students must develop technological competence and soft skills such as thinking skills and ethics to better reflect the nature of work performed by accountants.

The Pathway Commission reports (2012, 2015) represent recent calls for change in US accounting education. The commission was co-sponsored by the AAA and AICPA. In 2012, the Pathway Commission offered seven recommendations regarding accounting programs. The fourth recommendation generally centred on the importance of maintaining the relevance of accounting education – that is, accounting education must broaden its scope of teaching and learning to reflect global business trends. Students must be given opportunities to develop technical accounting knowledge, along with professional skills and ethical practice (Pathways Commission, 2012). In 2015, the commission published a follow-up report to strengthen its previous recommendation on developing an accounting education curriculum. In the latest report, the commission stated that 'professional

judgement/scepticism is a foundational skill necessary in the accounting profession' (The Pathways Commission, 2015, p. 3) and that 'curricula, pedagogy, and technology are tightly integrated, and no one aspect could be developed in a vacuum without the others' (The Pathways Commission, 2015, p. 4).

In Australia, major reports such as the Mathews Report (1990) and the report by the Institute of Chartered Accountants in Australia (ICAA) and the University of South Australia (UniSA) (2010) have also emphasised the need to transform accounting education (Bloom, 2014; Flood, 2014; Pierre & Rebele, 2014; Sundem, 2014; Wygal, 2014). The Mathews Report criticised accounting undergraduate programs for lacking effort to meet professional standards, and recommended accounting programs incorporate technology and professional skills, such as communication. The ICAA-UniSA joint report discussed strategies to address the changing competencies for accounting graduates (Evans, Burrit, & Guthrie, 2010). In 2015, academics from six Australian universities published a report titled 'Shaping the future of accounting in business education in Australia', which highlighted the challenge of accounting education to produce technical and other employability skills that reflect contemporary technology disruption in the business (O'Connell et al., 2015). A recent report from Certified Public Accountants (CPA) on the future of accountants in Australia noted that the ongoing changes in technology, consumer needs and regulations are reshaping the accounting profession, which indicates the need to transform Australian accounting education to fulfil market demand (CPA Australia, 2019). Jackling and De Lange (2009) investigated the views of Australian accounting graduates and employers on the importance of the technical and generic skills acquired during undergraduate accounting programs. They found that, while both parties recognised the value of technical competence, employers require a wide variety of generic skills that have not been adequately learnt by students through their accounting degree programs. Graduates indicated that the development of technical competence is overemphasised during their studies, while generic skills are underemphasised. These findings indicate that a gap exists between graduate perceptions of skills obtained in their university studies and employer expectations.

The aforementioned reports generally highlighted that the role and practice of accountants in society has altered significantly because of the globalisation of the economy, the intensive use of technology and the complexity of business activities.

The reports called for an emphasis on a wide array of competencies, not limited to technical knowledge of accounting (Kunz & De Jager, 2019; Pierre & Rebele, 2014). Given that the role of accountants has changed, there must be a corresponding change in accounting education so that individuals who pursue a degree in accounting have feasible prospects in the profession (Jackling, 2014; Lansdell et al., 2020). However, research indicates that undergraduate accounting education is in crisis.

Accounting education is generally considered to have limited success in developing accounting graduates' competencies to meet the demands of the industry (Flood, 2014), resulting in a competence gap that represents a mismatch between the competencies needed and the output of undergraduate accounting degrees (Bui & Porter, 2010; Khouloud & Tahar, 2020; Phan et al., 2020). The competence gap in accounting education is not only found in a particular country; rather, it has been reported in many countries worldwide (Al Mallak et al., 2020). At present, the competence gap still exists and there are even indications that the gap is widening because of the heavy use of technology in the business environment (Khouloud & Tahar, 2020; Kotb et al., 2019). Table 2.2 summarises some prior studies that have examined the competence gap in accounting education. The gap in technical and non-technical competence is discussed in the following subsections.

Table 2.2 Prior Studies on Accounting Education Competence Gap

Competence Gap		**Prior Studies**		
Technical Competence	**Non-technical Competence**	**Country/Region**	**Year**	**Reference**
Audit		Indonesia	2018	Suryani
Audit		Indonesia	2015	Setyaningrum et al.
Audit		Malaysia	2019	Heang et al.
Audit and information technology		Malaysia	2016	Lim, Lee, Yap, and Ling
Information technology		The US	2016	Rackliffe and Ragland
Information technology		Bangladesh	2016	Chowdhury and Dey
Information technology		Tunisia	2020	Khouloud and Tahar
Information technology		The United Kingdom (UK) and Ireland	2019	Kotb et al.
Information technology		The US	2019	AICPA
	Teamwork	Italy	2020	Dolce et al.
	Teamwork	Jordan	2020	Maali and Al-Attar
	Written communication	The US	2016	Riley and Simons

	Written communication	South Africa	2019	Kunz and De Jager
	Written communication	Tunisia	2017	Oussii and Klibi
	Written communication	Malaysia	2018	Norman, Latiff and Said
	Ethics and thinking skills (professional scepticism-judgement)	Sri Lanka	2016	Abayadeera and Watty
	Ethics	Saudi Arabia	2020	Al Mallak, et al.
	Ethics	The Middle East and North Africa	2020	Mah'd and Mardini
	Thinking skills (professional scepticism-judgement)	Scotland	2019	Douglas and Gammie
	Professional scepticism-judgement	Indonesia	2018	Fatmawati et al.
	Professional scepticism-judgement	Indonesia	2019	Karlina and Shauki

2.3.1 Technical Competence

IES 2 (technical competence) identifies 11 competence areas within technical competence: (1) financial accounting and reporting; (2) management accounting; (3) finance and financial management; (4) taxation; (5) audit and assurance; (6) governance, risk management and internal control; (7) business laws; (8) information technology; (9) business and organisational environment; (10) economics; and (11) business strategy and management. Among these competence areas, the audit and information technology competencies of accounting graduates are frequently considered deficient (Chowdhury & Dey, 2016; Setyaningrum et al., 2015; Suryani, 2018)

Competence Area: Audit

Audit competence relates to the ability to describe the objective and stages involved in an audit of financial statements and to apply relevant auditing standards and regulations to an audit of financial statements (IAESB, 2019). This is the fundamental competence that accounting students must master. Given the dynamic practice of auditing, accounting students are expected to develop audit competence that represents the changes in the profession. However, there is much evidence in the literature that accounting students are unfamiliar with auditing practice. This problem is even more significant for developing countries, such as Indonesia.

In Indonesia, employers complain that they struggle to hire staff with sound audit competence. This problem has forced employers to conduct intensive in-house

training for new audit staff (Suryani, 2018). Employers believe that students are taught an outdated theoretical approach to auditing in the undergraduate accounting program, which is difficult to relate to current business practice (Setyaningrum et al., 2015; Suryani, 2018). Practitioners claim that accounting educators place too much emphasis on accounting textbooks and teach theoretically in line with the contents of the textbooks (Suryani, 2018). This over-reliance on textbooks is perhaps because most accounting educators are not practitioners (Suryani, 2018). Critiques of 'non-practitioner educators' have been raised by Machfoedz (1997). To be professional accounting educators, Machfoedz (1997) stated that educators must have experience as practitioners; otherwise, they 'will just provide somebody else's story' (Machfoedz, 1997, p. 146). In some countries, educators are allowed to take leave from campus for six to 12 months to gain practical job experience in the business world. Without access to such opportunities, Indonesian educators rely on textbooks without being able to provide concrete and personal examples of accounting practice (Machfoedz, 1997). Unsurprisingly, when accounting graduates apply for jobs, employers complain about their lack of competence to apply their conceptual knowledge in job settings (Suryani, 2018).

Critiques of the overemphasis on textbooks in teaching auditing have been raised by many scholars (Irafahmi, 2019). Educators and practitioners have different views about which topics must be taught to help accounting students become auditors. Practitioners believe that educators should emphasise teaching topics of auditing related to practice, such as audit documentation, substantive testing and information technology auditing, while educators prefer to teach topics related to theory, such as internal control, fraud awareness and audit risk (Armitage & Poyzer, 2010; Blouch, Ulrich, & Michenzi, 2015). Through surveying CPAs about the relevance of auditing education, Blouch et al. (2015) found that a significant number of topics in auditing textbooks were considered unimportant to teach. Of the 63 topics surveyed, only 31 were considered important by the participating CPAs. Topics related to auditing practice were considered more important to teach than topics related to concepts. Examples of important topics were detailed tests of balances, analytical procedures, audit evidence and audit documentation.

Similarly, Armitage and Poyzer (2010) compared the perceptions of auditing educators to those of practitioners, and concluded that the two groups have different

priorities regarding auditing topics. Practitioners believed that important topics for an auditing course were those related to auditing practices, such as audit documentation, tests of controls and substantive testing. In contrast, educators believed topics related to theory, such as financial statement assertions, fraud awareness and internal control, were the most important topics. For educators, audit reports needed to be discussed in depth in class, while practitioners believed that educators should only briefly describe the topic by offering examples of the correct form and format of the audit reports. Given that the priority of educators is teaching theory, the course is perceived to be theoretical. Hence, it is difficult for students to obtain an accurate picture of auditing practices in the business world (Chaffey et al., 2011).

Teaching auditing is particularly challenging given its practical nature and the need to have sound knowledge in other core accounting subjects (Barac, Kirstein, Kunz, & Beukes, 2016; Keevy, 2020). To attain practical skills, auditing theory must be integrated with auditing practice through the use of teaching methods, such as case study (Chaffey, Van Peursem, & Low, 2011). The combination of theory and practice in auditing education is necessary because many accounting graduates who understand the theory are unable to apply the theory in practice (Chaffey et al., 2011). In a previous study, fresh accounting graduates believed that a lack of hands-on learning experience led to early employment problems (Heang et al., 2019). They felt they were not ready to work, even though they had a bachelor's degree in accounting. They indicated preference for accounting courses to provide a real-life learning experience to help them become more employable in the workplace (Heang et al., 2019).

The other outcome of highly textual pedagogy is that students become uninterested in pursuing a public accounting profession as a career. In Indonesia, few accounting graduates intend to work in the audit profession and qualified public accountants are scarce. The results of Suryani et al.'s (2018) study could explain the scarcity of public accountants in Indonesia. In their interviews, accounting students commented that they were unfamiliar with the public accounting profession despite completing auditing courses (Suryani et al., 2018). Perhaps students were not provided with learning experiences that attracted them to choose public accounting as a career.

Competence Area: Information Technology

Apart from competence in auditing, accounting students must be equipped with another fundamental technical competence – information technology. Information technology competence relates to the ability of individuals to explain and use information technology to support data analysis and decision making (IAESB, 2019).

The literature has reiterated the important role of technology in various accounting disciplines. For example, in audit and forensic accounting, accountants rely heavily on technology to prevent, detect, and mitigate fraud (Pearson & Singleton, 2008). Moreover, technology is an essential tool to make audits more efficient and effective (Antcliff, Doren, Harris, & Hayes, 2012; Bierstaker et al., 2001; Borkowski, Bukics, & Welsh, 2007). The usage of technology by audit firms is quite intensive at all stages of the audit, including in the stages of audit planning, audit testing, and audit documentation (Bierstaker et al., 2001). In management accounting, accountants use technology to handle financial reporting within an integrated information system (Spraakman, O'Grady, Askarany, & Akroyd, 2015). Therefore, the use of various technological tools – such as advanced Excel for data analysis, enterprise resources planning system, auditing software, accounting packages, and tax software – are integrated into the daily work of accountants regardless of their area of expertise (Boulianne, 2016; Pearson & Singleton, 2008; Rackliffe & Ragland, 2016; Spraakman et al., 2015; Willis, 2016).

Given that the accounting profession extensively uses technology, standard setting and accounting bodies encourage accounting educators to infuse technological competence into the accounting curriculum (AACSB, 2018; AICPA, 2018; IAESB, 2019). In 2018, the IFAC and IAESB stated that accelerating information and communication technology development in accounting education is the top priority of their mission (IAESB, 2018). The AICPA pre-certification core competency framework also identifies technological competence as a core competency that has long term value for accounting professionals (AICPA, 2018). Through a new accreditation standard (A5), the Association to Advance Collegiate Schools of Business (AACSB) emphasises developing students' agility with technology (AACSB, 2018). The term 'agility' refers to the ability to quickly adapt and use new

technology without extended training (Vien, 2018). Accounting departments seeking AACSB accreditation must document the learning strategies deployed in each course to improve students' technological competence and list the types of technology used in each course to support students' learning (excluding presentation software and word processing) (AACSB, 2018).

Given the inherent nature of technology in the work of accountants, accounting students are expected to be conversant with it; however, that is not always the case. Among the technical competences in IES 2, the technological competence of accounting graduates is most frequently reported as insufficient (Awayiga, Onumah, & Tsamenyi, 2010; Boritz & Stoner, 2014; Brewer, Sorensen, & Stout, 2014; Brown & Pike, 2010; Chowdhury & Dey, 2016; Harrast, Strong, & Bromley, 2010; Heang et al., 2019; Khouloud & Tahar, 2020; Kotb et al., 2019; Rackliffe & Ragland, 2016; Ragland & Ramachandran, 2014; Rebele & St. Pierre, 2015; Wessels, 2010).

For example, in Africa, accounting graduates' technological competence does not meet the expectations of the market (Awayiga et al., 2010; Khouloud & Tahar, 2020). While the job market demands graduates that have proficiency in technology, accounting educators in Tunisia place emphasis on teaching accounting knowledge (Khouloud & Tahar, 2020). Similarly, in a survey of graduates and employers in Ghana, Awayiga et al. (2010) found that employers rated the importance of computer technology skills higher than the accounting graduates. This finding indicates that technology is greatly needed in the accounting profession, yet accounting graduates seem to underestimate its importance.

In the US, Harrast et al. (2010) surveyed accounting students at three US universities to determine their knowledge of technologies, including spreadsheets, tax software and workflow expert systems. The results indicated that the majority of undergraduate accounting students were not proficient in the surveyed technologies even after they had completed an accounting information systems course. In the area of auditing, specific software for auditing such as, IDEA and Audit Command Language (ACL), was rarely implemented in auditing classes (Reinstein, Churyk, & Tate, 2018). Borkowski et al. (2007) interviewed managers in Big 4 accounting firms and mid-sized firms to determine which technology skills they would like their new employees to possess. The results showed that the top-level management in audit firms

believed that new employees should possess advanced Excel competence and be ready to adapt to firm-specific technology. The interviewees also believed that new employees would be able to accomplish their work more efficiently and effectively if they had developed more advanced Excel competence in their accounting education. Unfortunately, Brown and Pike (2010) reported that alumni and accounting firms complained about accounting graduates' inability to use Excel in a professional work setting. This finding is similar to that of Rackliffe and Ragland (2016), who surveyed accounting academics at more than 100 accounting programs in the US and found that students lacked Excel skills. Ragland and Ramachandran (2014) found a disconnect between students' perceptions and new hires' perceptions of the Excel functions that are useful for a job in public accounting. Students underestimated the usage of some Excel functions that are intensively used by auditors, such as formatting functions and filter data functions (Ragland & Ramachandran, 2014).

In Europe, Kotb et al. (2019) investigated accounting educators and practitioners in the UK and Ireland through an online survey and interviews. They found that undergraduate accounting students were rarely taught about technological tools that are used in the accounting profession. Accounting educators in auditing courses did not equip students with relevant technologies for auditing practice. A major obstacle for incorporating information technology into the accounting curriculum is that educators lack competence to teach information technology.

In Asia, Wulandari and Ali (2019) reported that the Indonesian accounting curriculum has not adopted new technology, such as Extensive Business Reporting Language (XBRL), despite the intensive use of XBRL in the accounting and auditing profession. Most accounting educators in Indonesia did not feel the need to integrate XBRL into the accounting curriculum (Wulandari & Ali, 2019), mostly because there was limited information of the benefits of XBRL, no regulation to integrate XBRL into the curriculum, and no specifics from regulators regarding how to integrate XBRL. Nonetheless, the accounting educators indicated that XBRL would be taught in a technology-oriented course, such as an accounting information system course, as other accounting courses are already too dense with conventional topics (Wulandari & Ali, 2019). Moreover, Chowdhury and Dey (2016) examined the extent to which information technology has become part of accounting education in Bangladesh. Using a survey, they compared the perceptions of professional accountants and accounting

students in Bangladesh regarding information technology integration in accounting education. The results showed a gap between students' and accountants' perceptions of information technology. The researchers suggested that the accounting curriculum should be made more technology oriented to minimise this competence gap.

Overall, while information technology has disrupted the business environment globally and changed the work of accountants, prior studies have indicated that it has not been adequately accommodated in the accounting curriculum. Hence, similar to audit competence, the technological competence of accounting students and graduates in many regions worldwide is considered lacking.

2.3.2 Non-technical Competence

Equipping students with strong technical competence is insufficient to produce well-rounded accounting graduates. Therefore, additional competencies as required by employers and practitioners are in demand. The IAESB's IES 3 (professional skills) and IES 4 (professional values, ethics and attitudes) specify the expected non-technical competence during an accounting education program. IES 3 and 4 include several competence areas that the literature continues to call to strengthen: teamwork, communication, ethics, and professional scepticism and judgement.

Competence Area: Teamwork

Within IES 3, teamwork is a professional skill categorised under the interpersonal and communication competence area. Teamwork skills relate to the ability to work and interact effectively with others (IAESB, 2019). Accounting students are expected to display teamwork when working to achieve a common goal (IAESB, 2019).

The importance of teamwork in the accounting profession has been reiterated in the literature. For recruitment purposes, teamwork is the most desired generic skill, along with communication (Dolce et al., 2020; Dunbar, Laing, & Wynder, 2016; Jackling & De Lange, 2009; Tan & Fawzi, 2017). Employers generally consider generic skills beyond the technical accounting knowledge of applicants when making employment decisions (Dolce et al., 2020; Dunbar et al., 2016; Jackling & De Lange,

2009; Phan et al., 2020). A study of accounting job advertisements in Australia and New Zealand showed that teamwork is the most sought-after skill (Tan & Fawzi, 2017; Tan & Laswad, 2018). It seems that the changing role of accountants has encouraged employers to seek candidates who are good team players (Tan & Laswad, 2018).

The results from several studies in different countries also suggest that teamwork is an essential capability that all employees should possess. Teamwork has several benefits, including increasing work outcome satisfaction, reducing cost-related service, increasing accounting firms' reputations, and supporting professional development and career advancement (Paguio & Jackling, 2016). A survey of chartered accountants in New Zealand reported that among the top professional capabilities for successful performance in the workplace, eight items were associated with interpersonal and personal capabilities, four items were related to intellectual capabilities, and only one item related to technical competence (Wells, Gerbic, Kranenburg, & Bygrave, 2009). The chartered accountants indicated that interpersonal skills, especially teamwork, were more important than individual work because most of their work was collaborative (Wells et al., 2009). Similar results were shown in a survey study in Malaysia (Ghani, Rappa, & Gunardi, 2018). Ghani et al. (2018) examined whether Malaysian employers from the public and private sectors emphasised employability skills differently, and concluded that both sectors perceived teamwork to be the most important skill.

With the importance attributed to teamwork in the workplace, it is a concern that employers perceive that accounting graduates need improvement in teamwork skills. In a survey of Australian accounting graduates and employers, Courtis and Zaid (2002) asked about the problems experienced by accounting graduates during their first year of employment. The study found that graduates and employers had the same perceptions in terms of the poor ability of accounting graduates to perform well in teams. This finding indicated that accounting education has a limited role in providing collaborative learning experience for accounting students.

Wells et al. (2009) surveyed chartered accountants regarding the extent to which accounting programs in New Zealand universities have provided essential capabilities for graduates working in public accounting firms. While the respondents perceived that accounting programs have reformed accounting education to align with

market demands, they also suggested that universities improve teaching and learning strategies and include teamwork and real-world learning situations.

Maali and Al-Attar (2020) examined whether accounting curricula in universities match the job market needs in Jordan. The survey results of academics and professionals revealed that skills related to teamwork were deemed the most important by professionals, but academics ranked teamwork at a low level of preference. Further, professionals perceived accounting graduates as lacking teamwork and coordination skills. Dolce et al. (2020) investigated the differences in perceptions and expectations between accounting graduates and employers in Italy. The results indicated that graduates' perceptions of the importance of technical and non-technical competence were lower than employers' perceptions. Accounting graduates admitted that they felt less competent in non-technical competencies such as teamwork and communication.

Overall, teamwork competence is considered lacking in accounting graduates. The main cause of this problem is minimal exposure to interpersonal relationships during the undergraduate accounting program (Courtis & Zaid, 2002). Maali and Al-Attar (2020) argued that an exam-oriented system that requires students to focus on working individually, rather than working collaboratively, diminishes students' opportunities to develop their teamwork skills. While individual examinations may be the best approach to demonstrate individual performance, the focus on individual work does not align with market needs (Maali & Al-Attar, 2020).

Competence Area: Written Communication

IES 3 categorises communication as a professional skill under the classification of interpersonal and communication skills (IAESB, 2019). Communication skills refer to the ability of accountants to communicate their work in oral and written form (IAESB, 2019). Good communication skills have been identified as essential for accounting graduates (Bui & Porter, 2010; Crawford et al., 2011; Phan et al., 2020). Employers usually seek accounting graduates who possess good communication skills (Dunbar et al., 2016; Lim, Lee, Yap, & Ling, 2016). This is evident in accounting job advertisements that place communication skills as the first selection criterion (Dunbar et al., 2016; Tan & Laswad, 2018). A survey of accounting practitioners also suggested that a decision to hire accounting graduates is often determined by the ability to demonstrate good communication competence (Riley & Simons, 2016). One possible

reason for employers to use communication as the main selection criterion is that most accountants and auditors nowadays not only calculate financial data, but they must also communicate the data effectively. Technical accounting knowledge must be accompanied by the ability to demonstrate effective communication (Howcroft, 2017). Hence, graduates should devote more attention to this competence if they consider pursuing a career in accounting (Howcroft, 2017).

While the form of communication in the auditing profession can be oral or written (see e.g., IFAC, 2015 Para. A37 - A45), research has indicated that especially for entry-level auditors, the most frequent activity is written communication (Siriwardane, Low, & Blietz, 2015). It is estimated that writing consumes at least one-third of auditors' time (Camacho, 2015; Nellermoe, Weirich, & Reinstein, 1999). Nevertheless, the literature continues to report concerns about accounting graduates' communication deficiencies (Christensen & Rees, 2002; Kunz & De Jager, 2019; Moore & Morton, 2017; Riley & Simons, 2016; Siriwardane & Durden, 2014; Stevens, 2005; Stout & Sorensen, 2015).

Investigating whether junior auditors met the expectations of audit managers, Kunz and De Jager (2019) concluded that junior auditors did not perform well on written communication. A comparison study revealed that deficiencies in written communication were common among accounting graduates in both Hong Kong and the US (Chen, 2013). This result aligns with a Malaysian study that identified communication as the greatest competence gap among accounting graduates (Norman, Latiff, & Said, 2018).

Ballantine and Larres (2009) highlighted that teaching methods in universities seem to prioritise the development of oral communication over written communication, and students reported that they did not obtain sufficient writing skills during their studies (Oussii & Klibi, 2017). Unsurprisingly, students perceived their oral communication to be better than their written communication (Bui & Porter, 2010).

Several studies have examined in-depth the specific areas of the written communication problem. Employers in Silicon Valley criticised the writing skills of new staff, and were especially concerned about problems such as typographical errors and flow of writing (Stevens, 2005). A survey of members of AICPA and the Institute

of Management Accountants (IMA) indicated that the problem lies in the organisation and clarity of written products (Christensen & Rees, 2002). In another US study, accounting educators and practitioners reported that a common problem in graduates' writing is related to spelling and grammar (Riley & Simons, 2016).

Christensen et al. (2011) listed several criteria for appropriate written communication from accounting professionals' perspectives, as follows: correct grammar, clear writing, correct spelling, effective sentences and paragraphs, proper business vocabulary, proper punctuation and document checking. Stout and Sorensen (2015) stressed the importance of 'word choice' in business communication. They insisted that word choice determined the accuracy and clarity of messages. Rather than focusing on the technical quality of writing, Smith (2005) acknowledged the implicit qualities that contribute to good writing – a written product must be concise yet comprehensive and accurate, so that readers receive a clear portrayal of the document.

In summary, accounting graduates should strengthen their writing skills in several areas, including in terms of coherency (Christensen et al., 2011; Smith, 2005; Stevens, 2005), clarity (Christensen et al., 2011; Christensen & Rees, 2002; Riley & Simons, 2016; Stevens, 2005; Stout & Sorensen, 2015), organisation (Christensen & Rees, 2002), and content (Smith, 2005). Holmes et al. (2018) compiled these aspects of writing to develop a rubric to assess students' writing. The rubric consists of four criteria: organisation, development, clarity and content. Organisation addresses the structure of writing, development indicates the coherency of writing, expression shows the clarity of writing, and content demonstrates students' understanding of the subject matter. These four criteria provide a comprehensive assessment of students' ability to write, and were used to assess students' written communication competence in the present study.

Competence Area: Ethics

According to the IAESB, a professional accountant is 'an individual … who is required to comply with a code of ethics as directed by a professional accountancy organization or a licensing authority' (IAESB, 2019, p. 9). Ethics is listed explicitly in IES 4, under the classification of professional values, ethics and attitudes. 'Professional values, ethics and attitudes' is the third category of abilities that an accountant must possess, following technical competence and professional skills.

Within the IESs, ethics is a competence area that relates to the ability to identify ethical issues and apply the relevant ethical requirements (IAESB, 2019).

The areas of accounting that are frequently associated with ethical issues are audit and financial accounting (Bayou, Reinstein, & Williams, 2011). Major corporate scandals, such as the WorldCom and Enron scandals, have been linked directly and indirectly to deceitful accounting and auditing practices (Bayou et al., 2011; Dellaportas, Kanapathippillai, Khan, & Leung, 2014). Yet, other areas of accounting, such as management accounting, are not free from ethical issues (van Der Kolk, 2019). Thus, regardless of the accounting field, students must be educated to consider every accounting tool as a technical and ethical decision-making tool (van Der Kolk, 2019).

Jackling, Cooper, Leung, and Dellaportas (2007) examined whether certain types of institutions have a higher likelihood of ethical issues, given that the published major scandals of accounting occurred in public accounting firms. They surveyed members of professional accounting bodies in America, Asia/Pacific, the Middle East/African subcontinent and Europe. The results indicated that the respondents did not believe that ethical issues are more common in public accounting entities, rather than other types of entities. Ethical issues tend to vary across different entities. The ethical issue that most commonly occurred in public accounting entities was conflict of interest. In government and not-for-profit entities, familiarity threats were the most common ethical issue. In business entities, the main ethical issue related to earnings management, which involves using accounting techniques to make financial statements look promising to investors.

Given that the accounting profession is vulnerable to ethical dilemmas, there is an expectation to enhance the coverage of ethics in accounting education (Jackling, De Lange, & Rav On, 2007; Rebele & Pierre, 2019; van Der Kolk, 2019). The IAESB recommends that ethics must be inherent at all levels of accounting education: general education, initial professional development and continuing professional development (IAESB, 2019). Members of professional accounting bodies believe that ethics should be learnt in accounting programs, rather than waiting until graduates are immersed in the workplace (Jackling, Cooper, et al., 2007). Employers also feel that integrating ethics components in accounting education should start early in a degree to allow students to understand the dynamics of the business world (O'Connell et al., 2015).

Despite extensive calls for ethical education, the literature indicates that ethics training has not increased in accounting education (Jackling, Cooper, et al., 2007). Accounting education is still criticised for overemphasis on technical content at the expense of ethical aspects (van Der Kolk, 2019). In examining the extent of ethical coverage in five popular management accounting textbooks, van Der Kolk (2019) found that ethical issues were underemphasised. Little information or guidance could be found in the textbooks to facilitate an in-depth discussion on the ethical values that underpin the management accounting decision-making process. Textbooks tend to place ethics in a separate section, and such separation may mislead students to think that ethics is only a supplement rather than an essential part of the accounting decision-making process (van Der Kolk, 2019).

In a survey of accounting students and accounting employers in Sri Lanka, Abayadeera and Watty (2016) found that work ethics was one of the most important skills for accountants, yet was given low emphasis in the accounting curriculum. Accounting students were satisfied only with the development of routine accounting skills. For employers, work ethics, dedication, target orientation, intellectual skills and decision making were the five most important skills in the accounting profession – even more important than technical skills. Unfortunately, unlike employers, undergraduate accounting students did not consider work ethics to be so important.

A recent survey of accounting students in Saudi Arabia revealed that the students believed that ethics and other generic skills were the main competencies that needed to be mastered upon completing their university studies (Al Mallak et al., 2020). However, students felt that their level of competence was not as high as their expectations. This gap indicated weaknesses in the curriculum regarding generic skills, including a content-oriented curriculum, limited class time, large class sizes and old-fashioned approaches adopted by accounting educators and institutions (Al Mallak et al., 2020).

Moreover, a study investigating the quality of accounting education in universities based in the Middle East and North Africa (MENA) found that academics and practitioners were not satisfied with the quality of accounting education at MENA universities because the focus of education was on knowledge transfer, rather than competence development. In addition, the IESs were not fully accommodated in the

accounting curriculum. Both academics and practitioners agreed that IES 4 related to ethics must be covered in both accounting education and in the profession. Interestingly, there were differences in perceptions between academics and practitioners. Practitioners believed that students cannot see the differences between rules-based and principles-based ethical frameworks because accounting programs at MENA universities fail to develop an awareness of the IFAC code of ethics. In contrast, academics considered the accounting programs to be quite successful in covering the IES 4.

In summary, ethics is a crucial aspect of the accounting profession. The responses from practitioners and students in prior studies indicated dissatisfaction with the ethics component in accounting education. Hence, accounting educators should increase ethics component in the accounting curriculum.

Competence Area: Professional scepticism and judgement

Professional scepticism and judgement has become a fundamental attribute of professional accountants. Professional scepticism and judgement is a competence area under the classification of professional values, ethics and attitudes (IES 4). Professional scepticism is defined as 'an attitude that includes a questioning mind, being alert to conditions which may indicate possible misstatement due to error or fraud, and a critical assessment of evidence', while professional judgement is defined as 'the application of relevant training, knowledge and experience, within the context provided by auditing, accounting and ethical standards, in making informed decisions about the courses of action that are appropriate in the circumstances of the audit engagement' (IAESB, 2019, p. 58). Accounting graduates with professional scepticism and judgement should be able to 'apply a questioning mindset critically to assess financial information and other relevant data' and 'identify and evaluate reasonable alternatives to reach well-reasoned conclusions based on all relevant facts and circumstances' (IAESB, 2019, p. 55). Such learning outcomes imply the need for accounting educators to prepare graduates with thinking skills. Thus, it is unsurprising that the accounting education literature often uses the term 'thinking skills' instead of professional scepticism and judgement (e.g., Abayadeera & Watty, 2016; Douglas & Gammie, 2019). Both terms refer to the same trait, whereby accounting students are expected to critically assess information or evidence (professional scepticism) and

make informed decisions (professional judgement) (Baril, Cunningham, Fordham, Gardner, & Wolcott, 1998; Hurtt, Eining, & Plumlee, 2008; Reinstein & Bayou, 1997). In auditing, the ability to critically assess information (professional scepticism) can be seen from the ability to detect error or misstatement in audit evidence (Hurtt et al., 2008).

Most studies consider the application of professional scepticism and judgement within the context of auditing (e.g., Hurtt et al., 2008; Ying, Patel, & Pan, 2020). However, professional scepticism and judgement is required across different accounting roles, and not just by those who work in audit and assurance services (Agrawal, Birt, Holub, & van Zyl, 2020). Nevertheless, the more process-oriented a role, the less scepticism is required (Agrawal et al., 2020). Moreover, professional scepticism and judgement is in high demand when countries decide to adopt the International Financial Reporting Standards (IFRS) (Nasution, Wardayani, & Muda, 2018). The use of IFRS indicates the shift of accounting concepts from rule-based to principle-based (Tan, Chatterjee, & Bolt, 2014). Principle-based accounting requires judgement to make decisions on recognition, measurement, presentation and disclosure of financial information. When accountants and auditors fail to make appropriate judgements, this may result in a low-quality decision making.

The importance of professional scepticism and judgement is even higher in the era of technology (McKinney, Yoos, & Snead, 2017; Reinstein & Bayou, 1997; Walstra, Harrington, & Drougas, 2014). Technology has replaced most routine tasks of an accountant; thus, accountants' role has expanded from technical to analytical. Accountants must analyse and interpret data that add value for decision-making purposes (Reinstein & Bayou, 1997). In particular, McKinney et al. (2017) pointed out that in the era of Big Data, where the velocity, variety and volume of data is abundant, sceptical accountants are in urgent need. Accountants must be familiar with various data sources, consider various approaches to analysis, and evaluate the cost and benefit of the analysis before making a decision. Given the importance of professional scepticism and judgement, CPA examinations always include professional scepticism and judgement (Cascini & Rich, 2007). The examinees are asked to analyse questions via in-depth analysis and seek alternatives before reaching a final decision (Cascini & Rich, 2007).

Professional bodies expect accounting programs to equip graduates with basic professional scepticism and judgement (IAESB, 2019; The Pathways Commission, 2015). The Pathways Commission in Australia released a report that addressed the call to reinforce professional scepticism and judgement in the accounting curriculum (The Pathways Commission, 2015). In 2015, three standard-setters (the IAASB, IESBA and IAESB) organised a taskforce to specifically address ways to strengthen the understanding and application of professional scepticism. The taskforce encouraged education providers to play a more significant role in developing professional scepticism (IAESB Professional Skepticism Task Force, 2018). The taskforce would like accounting educators to develop students' professional scepticism and judgement using case studies or problem-solving scenarios in the learning process (IAESB Professional Skepticism Task Force, 2018). These types of activities are expected to help accounting students meet the competency to become a professional accountant (IAESB Professional Skepticism Task Force, 2018).

Despite the expectation for developing professional scepticism and judgement in universities, the literature has posited that professional scepticism and judgement receives little attention in accounting education. For example, 247 final-year accounting students in Sri Lanka perceived that basic skills, such as thinking skills, were not adequately promoted during their degree (Abayadeera & Watty, 2016). Moreover, in a study to critically compare the development of non-technical skills at a Scottish university, Douglas and Gammie (2019) found that non-accounting graduates perceived they gained a higher level of thinking skills than did accounting graduates. This may place accounting graduates at a disadvantage, as Big 4 accounting firms indicate their preference to recruit applicants who possess general skills, regardless of their educational background.

Agrawal et al. (2020) found that accounting educators in Australia and New Zealand did not specifically declare 'professional scepticism' in the intended learning outcomes. Professional scepticism was also not being assessed. However, the accounting educators perceived they had implemented approaches to train students' scepticism, such as engaging students in discussion activities and asking students 'why' instead of 'how'. In comparing the level of professional scepticism between undergraduate accounting students and professional accountancy education program students, Fatmawati et al. (2018) found that Indonesian undergraduate students were

less sceptical than the professional accountancy education program students. Given that the majority of Indonesian accounting graduates directly enter the workforce without undertaking professional accountancy education programs, it is important to develop professional scepticism and judgement in undergraduate degrees.

In summary, Section 2.3 has highlighted the competence gap in accounting education, particularly the gap in technical and non-technical competence. Technical and non-technical competence are equally important for success in the workplace, yet accounting graduates are perceived as weak in both areas of competence. Employers, practitioners, and professional accounting bodies are continuously asking accounting programs to revisit the curriculum and pedagogy to ensure students become well-rounded accounting graduates. Accounting education has responded to these issues by employing the strategies presented in Section 2.4.

2.4 Strategies to Develop Competencies

Developing well-rounded graduates who perform well on both technical and non-technical competencies is not an easy task. Some researchers argue that the responsibility to develop competence should not be held only by undergraduate degrees in universities. There must be a separation of roles to educate accounting students. Undergraduate degrees should develop non-technical competence, while the role of training technical competence should be established by professional accounting bodies (De Lange, Jackling, & Gut, 2006; Jackling & De Lange, 2009). In contrast, Rebele and Pierre (2019) argued that accounting educators must serve students in developing technical knowledge of accounting. When educators are in the auditing classroom for instance, their main job is to teach auditing. Attempts to teach extended competencies, such as communication, ethics and thinking skills, waste time and likely decrease the chance of covering technical accounting knowledge. Technical knowledge is becoming increasingly complicated alongside the growing nature of business and technology, and accounting educators must teach students in a very limited time. Considering these time constraints, Rebele and St Pierre asked educators to focus on teaching the technical knowledge of accounting.

The majority of accounting stakeholders, however, are in consensus that undergraduate accounting degree should equip students with both technical and non-

technical competence that will help them succeed in the business world (Boyce, Williams, Kelly, & Yee, 2001; Fouché, 2013; Keevy, 2020; Kunz & De Jager, 2019; Lansdell et al., 2020; Lawson et al., 2015; O'Connell et al., 2015; Samkin & Keevy, 2019; Willcoxson et al., 2010; Yap et al., 2014). Therefore, several strategies for enhancing accounting students' competence have been adopted globally. At the standard-setter level, the IAESB established the IESs, which detail the learning outcomes of technical and non-technical competence that must be attained by aspiring professional accountants (IAESB, 2019). While accounting programs are encouraged to adopt the IESs in formulating the learning outcomes (Sugahara & Watty, 2016), the IESs provide a general guide only (Ballantine & Larres, 2009). Limited explicit guidance is available to assist accounting educators to meet the accounting bodies' expectation (Ballantine & Larres, 2009).

The need to develop technical and non-technical competence requires innovative approaches. Numerous studies have provided useful ideas to develop competence; however, they tend to focus on developing a particular type of competence, rather than the integration of technical and non-technical competence. For example, to enhance students' competence in technology, accounting programs could add information technology courses to the accounting curriculum (Santouridis, 2015) and embed innovative pedagogies. Guidance on pedagogy to teach technology in an information technology-related course has been provided by several studies, such as Brown and Pike (2010), Frownfelter- Lohrke (2017), and Willis (2016). When technology education is provided in a specific information technology course, the focus tends to be on teaching the technology itself, rather than how technology can help accountants or auditors work effectively. Thus, some argue that embedding technology into core subjects of accounting is more effective than providing standalone information technology courses. Useful examples of embedding technology into auditing courses are available (e.g., Andiola, Lambert, & Lynch, 2018; Bagley & Harp, 2012; Miller & Savage, 2009; Peaden & Stephens, 2013), but the lack of competence among accounting educators in using technologies has hampered implementation. It is suggested that accounting educators be given technological training first so that they understand the benefit of technology in accounting education and their resistance to technology can be minimised (Blount, Abedin, Vatanasakdakul, & Erfani, 2016; Watty, McKay, & Ngo, 2016).

To enhance ethical awareness, an ethics course may also be added to the curriculum (Cooper et al., 2008; Dellaportas et al., 2014; Fisher et al., 2007; Graham, 2012; Kelly, 2017; Leung & Cooper, 1994; Massey & Van Hise, 2009; Mintz, 2006). Graham (2012) analysed the effectiveness of an ethics course in undergraduate programs and found that the ethics course was perceived to be important by students. Massey and Van Hise (2009) adopted an active learning approach, such as case studies and reflective learning techniques, in a standalone ethics course. The results indicated a high degree of student satisfaction and perceived learning. Reflective learning technique was also found useful in teaching ethics (Mintz, 2006). Mintz (2006) described learning resources, pedagogy and assessment that can assist other educators in enhancing ethical awareness. In a discipline-specific context, (Taplin, Singh, Kerr, & Lee, 2018) assessed the usefulness of role-playing in teaching ethics in auditing courses. Role-playing was found useful for students from different demographic backgrounds and especially beneficial for students with English as a second language.

To facilitate the development of non-technical competence such as communication, teamwork and thinking skills, researchers have recommended the use of innovative pedagogy such as case study, collaborative learning, role playing, simulation, and business games (Agrawal et al., 2020; Ballantine & Larres, 2009; Christensen, Harrison, Hollindale, & Wood, 2019; Crawford et al., 2011; Derstine, Emig, & Grant, 2015; Mihret, Abayadeera, Watty, & McKay, 2017; Samkin & Keevy, 2019; Viviers, 2016). Crawford et al. (2011) recommended the use of case studies and business simulation to help students acquire critical thinking, and role-playing to develop students' communication skills. Derstine et al. (2015) suggested collaborative learning and case studies to enhance students' communication, decision-making abilities and mastery of technical accounting knowledge. Case studies developed by a financial institution (external stakeholder) have been found useful in soft skills growth because they help students develop decision making, communication and research abilities (Samkin & Keevy, 2019). The students in a previous study believed that the collaborative learning aspect of the case study had the greatest effect on the development of ethical behaviour and personal characteristics (Samkin & Keevy, 2019).

The use of case studies has allowed students to develop their questioning mind, and consider alternatives and perspectives for decision making (Agrawal et al., 2020).

A case study assignment contributed to the development of professional judgement of accounting students in an online auditing course (Mihret et al., 2017). A collaborative learning atmosphere in the introductory accounting classes was successful in enhancing students' leadership skills and ability to function as a team member (Christensen et al., 2019). Similarly, undergraduate accounting students in a cooperative learning environment were found to have better interpersonal and communication skills than students in a conventional learning environment (Ballantine & Larres, 2009). Fun learning activities, such as business games, were recommended as an effective and innovative teaching method that can positively contribute to the soft skills development of accounting students, especially in teamwork and communication skills (Viviers, Fouché, & Reitsma, 2016).

While prior studies have provided insight to improve students' competence, prior studies generally focused on developing partial competence and lacked focus on developing both technical and non-technical competence. Moreover, most prior studies suggested the use of innovative teaching methods, such as case studies or simulation without considering placing these methods within the course design. Although it is important to implement an innovative teaching method, its value is greater when the method is included in the course design (Mladenovic, 2000; Zhao, 2016). Attempts to develop technical and non-technical competence '… need to address the system as a whole, not simply add "good" components, such as a new curriculum or method' (Biggs, 1996, p. 350). Elements within the course design are interrelated (a teaching method is only one of the elements), and failure to consider all elements limits the possible positive outcomes (Mladenovic, 2000).

Several accounting education researchers have provided guidance on how to encompass both technical and non-technical competence in course design (Lawson et al., 2015; Wessels, 2010; Willcoxson et al., 2010). Lawson et al. (2015) recommended an integrated educational pedagogy to develop competencies within a single course. The main idea of integration is directing students to expand their competence beyond technical competence, and the 'teaching method and assessment should reflect this reality' (Lawson et al., 2015, p. 153). Wessels (2010) proposed a critical learning outcome approach that consists of several steps, including identify the learning outcomes of the course, identify the learning activities that are required to achieve the learning outcomes, and assess all the attainment of learning outcomes. Willcoxson et

al. (2010) described a systematic strategy to provide assurance of learning. At the course level, they emphasised the need to ensure that 'the objectives, teaching activities and assessment activities within courses were aligned' (Willcoxson et al., 2010, p. 70).

The approaches proposed by Lawson et al. (2015), Wessels (2010) and Willcoxson et al. (2010) can be classified under the framework of 'constructive alignment'. Constructive alignment is a framework used to enhance the quality of teaching and learning (Biggs 1996, 1999; Biggs and Tang 2011). The idea is to place the development of competence in the context of course design, by embedding the expected competencies in the intended learning outcomes and creating teaching-learning activities and assessments that align with the intended learning outcomes. This approach aligns with the first recommendation of the 2015 CPA Australia commissioned report, which states that, to internalise professional knowledge and skills throughout the degree program, accounting programs must 'create and expand learning strategies and assessments that develop students' professional skills and explicitly ensure that such skills are embraced, and assessed' (O'Connell et al., 2015). The following section explores the constructive alignment framework – a useful guideline that is deemed appropriate to assist in the development of accounting students' competence.

2.5 Constructive Alignment

Constructive alignment is an integrative framework that is effective in enhancing the quality of teaching and learning (Biggs & Tang, 2011; Fitzallen, Brown, Biggs, & Tang, 2017; Nightingale et al., 2007; Wang et al., 2013; Zhao, 2016). The framework has an easy-to-follow mechanism of creating synergy between components in course design (Kandlbinder, 2014; McCann, 2017; Wang et al., 2013). As a result of its simple mechanism, many universities in different parts of the world – such as Australia, the UK and Hong Kong – have used constructive alignment to design their courses (Joseph & Juwah, 2012; Kandlbinder, 2014; Ruge, Tokede, & Tivendale, 2019; Wang et al., 2013).

John Biggs is regarded to have developed this framework. At the early stage of developing constructive alignment, Biggs was inspired by the work of Ralph Tyler (1949) and Thomas Shuell (1986) (Biggs, 2014). In 1986, Shuell stated:

> If students are to learn desired outcomes in a reasonably effective manner, then the teacher's fundamental task is to get students to engage in learning activities that are likely to results in their achieving those outcomes … It is helpful to remember that what the student does is actually more important in determining what is learned than what the teacher does. (Shuell, 1986, p. 429)

Shuell's statement suggests that the key to helping students achieve the desired outcomes is creating a learning environment that provides opportunity for students to learn what they intend to achieve. However, whether students can achieve the desired outcomes largely depends on 'what the student does'. In this regard, the student is the most important actor in their knowledge creation (Biggs, 2014). The teacher's role is to design a learning environment that enables students to learn in a meaningful way to achieve the desired outcomes. Biggs used Shuell's idea to build the framework of constructive alignment.

Constructive alignment has two essential parts: constructive and alignment. The 'constructive' part is based on the constructivist theory, which focuses on learning, while the 'alignment' part is based on the curriculum theory, which focuses on teaching (Biggs, 2002, 2003; Biggs & Tang, 2011). Teaching should be seen as a way to promote learning, rather than to transmit learning (Biggs & Tang, 2015). Good teaching leads to quality learning, and when quality learning can be attained, it is likely that students will have a better opportunity to achieve the desired outcomes (Biggs, 1996, 2014; Biggs & Tang, 2011). Helping students to achieve the desired outcomes is the goal in outcomes-based education (Biggs, 2014; Biggs & Tang, 2011, 2015).

To make the alignment principle more apparent, Biggs explained that the focus should be on three major components in the teaching and learning system: the intended learning outcomes, the teaching and learning activities and the assessment tasks. The goal of constructive alignment is to have all three components support one another. The problem in teaching practice, particularly in higher education, is that there is not always synergy among those three components. As a result, it is difficult for students to achieve the intended outcomes (Biggs & Tang, 2011). Figure 2.1 presents a visual

model of constructive alignment, known as the ‘Golden Triangle’ (Gallagher, 2017; Kinash & Knight, 2013).

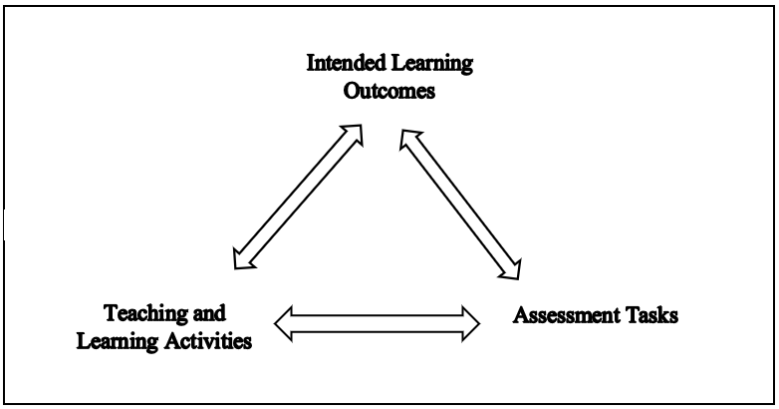

Figure 2.1 Biggs' Model of Constructive Alignment

To create an aligned system for learning, the first step is to define the intended learning outcomes that students are expected to achieve. Teaching and learning activities and assessment tasks are then designed to support the intended learning outcomes. Defining the learning outcomes before teaching occurs is important because the outcomes state clearly what students should be able to perform after completing a course or a program (Biggs & Tang, 2011). To formulate the intended learning outcome, teachers must distinguish between declarative and functioning knowledge (Biggs, 2002, 2003; Biggs & Tang, 2011). Declarative knowledge refers to knowledge that involves facts or how something should work. When students apply declarative knowledge in a practical context amid the complexities of everyday life, the knowledge becomes functioning knowledge (Biggs & Tang, 2011). The use of appropriate verbs in the intended learning outcomes becomes the marker of the specific knowledge a teacher expects students to achieve. If the learning outcome focuses on functioning knowledge, the teaching-learning system will be adjusted in that direction. Defining appropriate outcomes should be followed by communicating with students about the outcomes. Students should be clear about the outcomes; otherwise, they will not demonstrate relevant learning behaviour that matches the expectations.

The next step in the alignment principle is to ensure the teaching-learning activities support the achievement of learning outcomes. Unlike the basic idea of constructivist theory, whereby learners actively construct their knowledge, teaching and learning in higher education often uses formal lectures – a method that requires minimal student participation (Biggs & Tang, 2011). This is problematic when the

learning outcomes target functioning knowledge where students must apply declarative knowledge in practice. Misalignment between intended learning outcomes and teaching and learning activities is common in higher education (Kabouha & Elyas, 2015; Shipton et al., 2018). For instance, Kabouha and Elyas (2015) revealed the problems in delivering an English-speaking course at a Saudi university, particularly regarding the incongruence between learning activities and intended outcomes. They believed that this issue inhibited students from becoming communicative English speakers. Shipton et al. (2018) conducted a systematic review of the 383 curricula of pain medicine education, and found that learning activities were dominated by lectures and seminars. These activities deviated from the goal of providing appropriate pain medication, which requires exposure to clinical activities.

To align the intended learning outcomes and teaching-learning activities, Biggs suggested using the same verb in the teaching-learning activities as in the intended learning outcomes. For example, a learning outcome could be 'by the end of the course, students should be able to audit financial statements'. This is an application-focused learning outcome. Alignment is achieved by ensuring that the verb in the outcome presents in the teaching and learning activities (Biggs & Tang, 2011). In this case, the teaching and learning activities should focus on auditing financial statements, not providing lectures on auditing. By offering opportunities for students to develop such skills in learning activities, students are more likely to achieve the intended outcome. In professional-oriented programs – such as in business, medical, engineering and social work – case-based learning is considered appropriate to help students learn theory and practice at the same time (Biggs & Tang, 2011).

The final step to align the system is by designing assessment tasks that can accurately measure the achievement of the learning outcomes. To ensure that the students achieve what is expected, assessments must mirror the expectation (Biggs & Tang, 2011). The same verb should be applied in the formulation of an assessment task. For example, if the goal is to help students learn how to audit financial statements, the assessment should focus on how well a financial statement is audited.

An essential element in the alignment system is feedback. It is argued that an appropriate alignment of intended learning outcomes, teaching and learning activities, and assessment tasks is enhanced by effective feedback, which facilitates the

acquisition of deep learning and attainment of the desired learning outcomes (Biggs, 2014; Biggs & Tang, 2011; McCann, 2017). Given the importance of feedback in complementing the alignment system, Gallagher (2017) specifically included feedback in the constructive alignment model, as depicted in Figure 2.2.

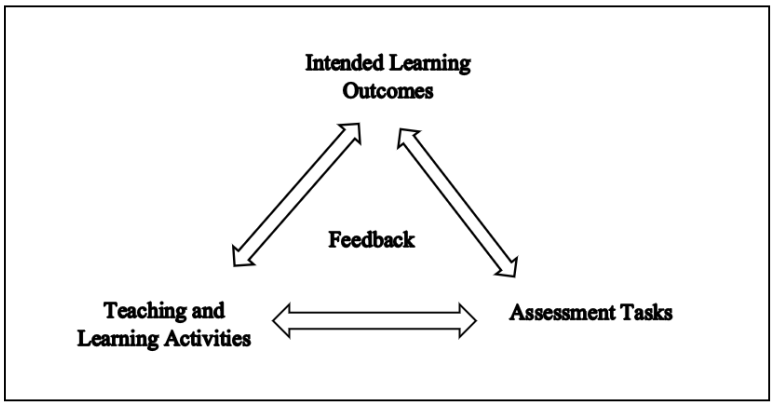

Figure 2.2 Constructive Alignment with Feedback

Many studies have examined the influence of constructive alignment on students' learning (see Table 2.3). Constructive alignment has been reported to have a strong linkage with improvement in students' approach and motivation to learn. Lawson (2011) explored whether the degree of alignment affected learning approach and motivation in several courses in the Department of Education, Sports Science, Social Policy and Informatics at Bangor University, UK. He found that alignment had a positive effect on both approach and motivation to learning. A highly aligned course promotes a deep approach to learning. This finding is similar to the results of a Hong Kong study by Wang et al. (2013), who compared two programs with different degrees of constructive alignment. They found that students in the more aligned program adopted more deep learning and less surface learning approaches. The results suggested that students' approach to learning can be influenced by the learning environment.

Constructive alignment has also been shown to positively affect students' learning outcomes. Treleaven and Voola (2008) studied the impact of constructive alignment on the development of graduate attributes in a marketing course. They found that students felt confident in the development of lifelong learning and critical thinking – two important indicators of graduate attributes. In the context of the social work discipline, Teater (2011) found that the application of constructive alignment

contributed to students' confidence in applying social work theories in practice. Larkin and Richardson (2013) examined the implementation of constructive alignment in an undergraduate occupational therapy program, and their results indicated that implementation of constructive alignment improved students' satisfaction with teaching and academic grades. Joseph and Juwah (2012) compared the clinical skills of nursing students who participated and did not participate in a constructively aligned curriculum. They found that those in a constructively aligned curriculum acquired more clinical skills than did those in the non-aligned curriculum. This finding indicated that, within nurse education, constructive alignment can help students meet the practice requirements (Joseph & Juwah, 2012).

Table 2.3 Prior Studies on the Impact of Constructive Alignment

Research Focus	Reference	Research Method	Field of Study (Region)
1. Constructive alignment improves motivation to learn	Lawson (2011)	Questionnaire	Education, sports, science, social policy and informatics (UK)
2. Constructive alignment improves approach to learning	Wang et al. (2013)	Questionnaire	Programs A and B (Hong Kong)
	Lawson (2011)	Questionnaire	Education, sports, science, social policy and informatics (UK)
3. Constructive alignment improves learning outcomes			
a. Improvement in technical competence	Joseph and Juwah (2012)	Interview	Nursing (UK)
	Larkin and Richardson (2013)	Questionnaire Students' grade	Occupational therapy (Australia)
	Teater (2011)	Survey	Social work (UK)
b. Improvement in non-technical competence	Treleaven and Voola (2008)	Questionnaire Teachers' feedback	Marketing (Australia)

Figures 2.3 and 2.4 present conceptual models of constructive alignment that were developed by Vitale (2010) and Lawson (2011). As shown in Figure 2.3, Vitale (2010) described the relationship between constructive alignment and the attainment of learning outcomes. The alignment between the desired learning outcomes, teaching activities and assessment tasks has a direct relationship with the learning outcomes achieved (Vitale, 2010). Moreover, in the model depicted in Figure 2.4, Lawson (2011) described that constructive alignment in the teaching context affects students' motivation and approach to learning.

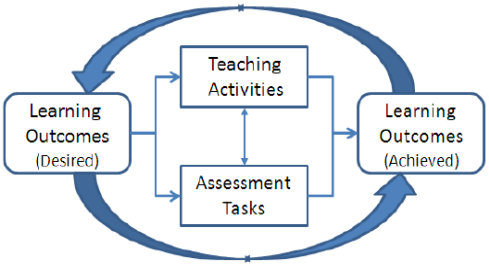

Figure 2.3 Conceptual Model of Constructive Alignment (Vitale, 2010, p. 54)

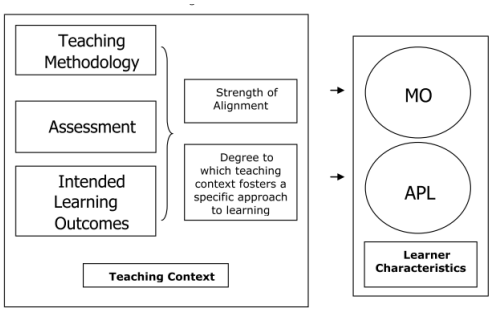

Figure 2.4 Conceptual Model of Constructive Alignment (Lawson, 2011, p. 61)

While the positive outcomes from the implementation of constructive alignment have been reported in the literature (e.g., Joseph & Juwah, 2012; Larkin & Richardson, 2013; Treleaven & Voola, 2008), there is a dearth of studies investigating the adoption of constructive alignment in accounting education (Gunarathne et al., 2019). Among these few studies, Lui and Shum (2012) described how they established a managerial accounting course in a university in Hong Kong using a constructive alignment framework. They began by creating learning outcomes and then designed teaching activities and assessments to facilitate students' achievement of the learning outcomes. However, the learning outcomes only included the expectation to comprehend the technical competence of a managerial accounting course, such as 'describe the behaviour of variable costs', 'prepare budget', and 'apply cost-volume-profit analysis'. Regardless of the scope of the learning outcomes, anecdotal evidence from the instructor of the course indicated that the course contributed to helping students meet the desired graduate attributes (Lui & Shum, 2012).

In another study conducted in Sri Lanka, Gunarathne et al. (2019) reviewed accounting syllabi and revealed that, when accounting courses were designed with a focus on achieving learning outcomes, various teaching activities and assessment tasks were applied to address the learning outcomes of the courses. Further, Algharaballi (2019) examined the alignment of accounting syllabi in Kuwaiti universities and interviewed graduates and academics. The findings indicated that the learning outcomes of accounting courses in public universities were mainly selected from accounting textbooks and not related to market needs. In contrast, the learning outcomes of private universities considered the requirements of accreditation bodies, such as AACSB. Graduates indicated that they did not devote attention to the intended

learning outcomes of the course. They perceived that their accounting instructor treated the learning outcomes in syllabi as merely administrative requirements. Accordingly, the teaching and learning activities did not align with the learning outcomes. Lecturing was the dominant teaching method in Kuwaiti universities. Graduates believed that the reliance on lecturing obstructed their opportunity to develop necessary skills, such as communication and teamwork. Regarding assessments, graduates commented that written test assessments emphasised memorisation of knowledge and neglected the need to concentrate on application of knowledge (Algharaballi, 2019).

The importance of constructive alignment to develop multiple competencies (accounting, ethics, critical thinking, communication and teamwork) in an accounting course was discussed in Dean et al. (2018). They described the process of transforming the accounting course using the alignment principle and measured the effect of transformation by surveying students and lecturers. When students were asked to describe what accounting meant to them after attending a constructively aligned accounting course, most students replied that accounting was not solely about calculation and financial procedures, which deviated from students' prior perception of accounting. Moreover, students perceived that the course enabled them to develop technical knowledge and other skills, such as communication, teamwork, thinking skills and ethics. Lecturers perceived that more effort was required to enhance integrative capabilities because they believed that an understanding of discipline-specific knowledge was insufficient to teach students within this alignment system.

While these studies have highlighted the positive impact of constructive alignment on students' learning, there remains uncertainty regarding whether students' competencies are truly improved, as the indicators for successful implementation of constructive alignment were mostly derived from the subjective perspectives of students or lecturers (e.g., Dean et al., 2018; Larkin & Richardson, 2013; Lawson, 2011; Teater, 2011; Wang et al., 2013; Zhao, 2016). Relying on perceptions to measure the effectiveness of an intervention in education is unconvincing because 'knowing how students perceive an intervention is not the same as understanding what and whether they have learned' (Apostolou et al., 2020, p. 19). To gain a more accurate understanding of students' development of competence, the use of a direct measure of students' achievement, such as students' course performance, is warranted (Grimm &

Blazovich, 2016; Wang et al., 2013). Moreover, the scope of prior studies was limited to investigating the development of either technical or non-technical competence. There is a scarcity of prior studies documenting the effectiveness of constructive alignment to develop both technical and non-technical competence, especially in the area of accounting education. The current research sought to address this gap. By using objective and subjective measures, this research expands the existing literature by examining whether the implementation of constructive alignment in the context of an auditing course is effective in helping students develop both technical and non-technical competence.

2.6 Accounting Education in Indonesia

Given that this study focused on education in Indonesia, this section provides an overview of accounting education in Indonesia. In Indonesia, accounting education at higher education level is provided by public and private institutions (Ministry of Research Technology and Higher Education, 2019; Wulandari & Ali, 2019). The majority of higher education institutions are private (96.3%), while the government owns only 13.7% of these institutions (Ministry of Research Technology and Higher Education, 2019). Based on *Law 12/2012 on Higher Education* (Government of Indonesia, 2012), there are three different streams of higher education: academic (undergraduate, master and doctoral degree), vocational (Diplomas 1, 2, 3 and 4) and professional (e.g., a professional education program for an accountant, engineer, architect, doctor or psychologist). After completing an undergraduate degree, accounting graduates can continue towards a master and doctoral degree or continue with professional accountancy education programs.

The professional accountancy education programs are operated by universities in cooperation with the IAI. Both accounting graduates and non-accounting graduates can take part in the professional accountancy education programs (Ministry of Finance, 2014). However, unlike accounting graduates, non-accounting graduates must follow the matriculation courses organised by universities prior to their enrolment in the professional accountancy education programs. The matriculation courses include a core body of accounting knowledge such as financial accounting, management and

cost accounting, auditing, information systems, taxation, business law, financial management, and economics.

To attain a professional credential in Indonesia, such as chartered accountant (CA), CPA or certified professional management accountant, an individual must meet the following requirements: (1) passed a certification examination held by professional accounting bodies (IAI, IAPI or IAMI); (2) relevant work experience in the field of accounting for at least three years; and (3) a member of a professional accounting body. Only those who earn accounting credentials, have a registered accountant certification, and have a licence to practice are permitted to provide accounting services through accounting service firms (Kantor Jasa Akuntansi) or public accounting firms (Kantor Akuntan Publik) (Government of Indonesia, 2011; Maradona & Chand, 2018; Ministry of Finance, 2014, 2017).

In Indonesia, an undergraduate accounting degree takes four years. Students typically must complete around 140 credits to finish a degree. One credit in the Indonesian education system equals 50 minutes of in-class meetings, 50 minutes of tasks, and 50 minutes of independent learning per week. The final semester of study is usually dedicated to community service or an internship and to writing a thesis. The structure of the curriculum for the four-year undergraduate degree in accounting varies slightly among universities because of the autonomy given to universities. Nevertheless, the national curriculum standard requires a higher education curriculum to include character-building courses in the curriculum, regardless of the disciplines.

Character-building courses have the specific aim of strengthening students' religion and national identity. The courses include religion, *Pancasila* ('five principles' – the core ideology of Indonesia), civics and Indonesian language. Table 2.4 presents the typical structure of the curriculum in an undergraduate accounting program in Indonesia. The curriculum comprises four parts: character-building courses, basic knowledge of business courses, accounting courses, and community service and final project.

Table 2.4 Accounting Curriculum in a Four-year Program at an Indonesian Public University

Courses	Credits	Courses	Credits
Character-building	**8**	**Accounting**	**84**
1. Religion: Islam/Protestant/Catholic/Hindu/Buddhist	2	***Compulsory course***	**75**
2. *Pancasila*	2	1. Intermediate accounting 1	3
3. Civics	2	2. Intermediate accounting 2	3
4. Bahasa Indonesia	2	3. Advanced accounting 1	3
		4. Advanced accounting 2	3
Basic knowledge of business	**38**	5. Taxation 1	3
1. English for business	3	6. Taxation 2	3
2. Statistics	3	7. Cost accounting 1	3
3. Entrepreneurship	3	8. Cost accounting 2	3
4. Introduction to economics 1	3	9. Management accounting	3
5. Introduction to economics 2	3	10. Accounting information system	3
6. Mathematics for economics and business	3	11. Financial management 1	3
7. Introduction to accounting 1	3	12. Financial management 2	3
8. Introduction to accounting 2	3	13. Public sector accounting	3
9. Introduction to business	3	14. Auditing 1	3
10. Introduction to management	3	15. Auditing 2	3
11. Information and communication technology	3	16. Accounting theory	3
12. Business law	3	17. Budgeting	3
13. Bank and other financial institutions	2	18. Management control systems	3
		19. Investment management	3
Community service and final project	**10**	20. Research methodology 1	3
1. Community service/internship	4	21. Research methodology 2	3
2. Thesis	6	22. Computerised accounting	3
		23. Financial statement analysis	3
		24. Internal audit	3
		25. Forensic audit	3
		Elective course (select at least three courses)	**9**
		1. Syariah accounting	3
		2. Operational management	3
		3. Accounting practices	3
		4. Auditing practices	3
		5. Operational research	3
		6. Taxation practices	3
Total credits	**140**		

Accounting is one of the most popular study programs in Indonesia (Irsutami & Fikri, 2016; Ministry of Research Technology and Higher Education, 2019; Pratama, 2017), with 991 accounting programs offered by higher education institutions (Ministry of Research Technology and Higher Education, 2019). Of a total of 7.3 million students currently enrolled in Indonesian higher education institutions, 24% (1.7 million) study economics, including accounting (Ministry of Research Technology and Higher Education, 2019). One of the factors behind students' strong interest in studying accounting is the perception that careers in accounting are

promising in terms of the availability of jobs (Irsutami & Fikri, 2016; Pratama, 2017; Rudiyanto & Widasari, 2018).

Despite the strong interest in accounting programs, the number of professional accountants is low. The ratio per capita of Indonesian accountants is the lowest of all Southeast Asian countries (Cahyadi et al., 2019; Rudiyanto & Widasari, 2018; Suryani et al., 2018; Utami et al., 2011; Zoraifi, 2015). Only a small number of accounting graduates seek professional certification, such as CA or CPA, and Indonesia has identified insufficient numbers of accountants since the 1980s (Laksmi, 2015). Previously, the main reason for this issue was the limited number of educational institutions offering accounting programs, and lack of guidelines for developing the accounting profession (Laksmi, 2015). Nowadays, with the increasing number of accounting programs and the existence of professional accounting bodies that govern the direction of accounting education and the profession, the number of qualified accountants is growing, yet still inadequate (Phan et al., 2020).

Given that Indonesia is the world's tenth-largest economy and the largest economy in Southeast Asia (The World Bank, 2020), the current supply of accountants does not fulfil the demand for accounting and audit services. One impact of this shortage is the numbers of accountants from other countries working in Indonesia through Big 4 accounting firms (Zoraifi, 2015), making the job market more competitive for local graduates.

Indonesian accounting education has undergone changes since the 1960s (Machfoedz, 1997). Accounting practices and accounting education in Indonesia were strongly influenced by the Dutch colonial system, called the 'bookkeeping system' (Laksmi, 2015; Machfoedz, 1997; Maradona & Chand, 2018). State companies controlled the business sector, so government accountants dominated the profession (Machfoedz, 1997). When Indonesia declared independence in 1945, only one Indonesian citizen worked as an accountant (Jermias, 2018). Indonesian accountants increased in the 1960s after Indonesian academics who pursued accounting studies in the US returned to Indonesia (Machfoedz, 1997). The emergence of Indonesian accountants with a US educational background changed the content of accounting education, from the Dutch bookkeeping system to the US modern accounting system (Machfoedz, 1997).

The next driver of change in accounting education occured in the 1980s when Indonesia opened access for private companies (domestic and foreign) to participate in the country's economy, and the government issued a capital market activation policy to encourage state-owned companies to go public (Machfoedz, 1997). As a result, the number of state-owned companies going public increased rapidly and the orientation of accounting education was altered from government accounting to public and management accounting to fulfil the business demand (Machfoedz, 1997).

The need for change in Indonesian accounting education reoccurred because of adjustments in accounting standards. In 2008, Indonesia declared the decision to comply with global accounting standards, called the IFRS. The IFRS was designed by the International Accounting Standards Board (IASB) to produce comparable financial reporting of companies worldwide (Saito, Hiramatsu, & Mayangsari, 2012). Indonesia was the pioneer in the Southeast Asia region to initiate the convergence of local accounting standards with international standards. Indonesia undertook a two-phase convergence process. The first phase occurred in 2008 to 2012, while the second phase occured in 2012 to 2015 (Maradona & Chand, 2018). The old standard (based on the US accounting standard) and the new standard (IFRS) have different characteristics. The main difference is the change in accounting concepts from rule-based to principle-based. Unlike the rule-based system, which emphasises the use of criteria that do not require much judgement, the principle-based system strongly emphasises professional judgement (Nasution et al., 2018).

The changes in Indonesian accounting education over the last 10 years were mostly triggered by the globalisation of the economy and the dynamic in the technology-intensive business landscapes, which demanded an expanded set of competencies (Phan et al., 2020; Pratama, 2015; Wulandari & Ali, 2019). In 2015, Indonesia and nine other Southeast Asian countries signed an agreement to commence a joint economy called the ASEAN Economic Community (AEC). Within the AEC, the flow of goods, services, investment and labour among ASEAN countries is less restricted. The AEC provides both opportunities and challenges to accounting graduates (Adhariani, 2020). To remain competitive in the global market, accounting graduates must be equipped with relevant competencies; otherwise, accountants from other countries will rapidly fill the local accounting positions (Adhariani, 2020; Phan et al., 2020; Prayanthi & Nelwan, 2019).

2.7 Summary

This chapter has discussed the issues around competence development in the context of accounting education. The literature supports broadening the scope of accounting education to develop both technical competence and non-technical competence of students. Despite the continuous call for competence development, it seems that accounting educators are still struggling to develop competencies beyond content-knowledge. Constructive alignment, a framework that emphasises competence development in the context of course design, seems to be useful in the development of students' competencies and to better prepare students to become professional accountants. The following chapter describes the research methodology of this study.

CHAPTER 3
METHODOLOGY

3.1 Introduction

The purpose of this study was to investigate whether the development of accounting students' competencies could be enhanced by implementing constructive alignment. To achieve this purpose, the study employed a mixed-methods research approach. This chapter describes the details of this approach. The chapter begins by discussing the epistemological assumption underpinning mixed-methods research. This is followed by a description of the research design in each of the study phases. The validation techniques and ethical issues are discussed at the end of the chapter.

3.2 Epistemological Assumption for Mixed-methods Research

Researchers need to state the epistemological assumption of a study to justify the basic sets of beliefs that guide the chosen research approach, such as qualitative, quantitative or mixed-methods research (Creswell & Creswell, 2018; Johnson & Christensen, 2012, 2017). Crotty (1998) described epistemology as a branch of philosophy dealing with the process to understand and explain 'how we know what we know' (p.3). Similar to Crotty's definition, Bazeley (2018) stated that epistemology helps us make sense of the world around us. Braun and Clarke described the concept of epistemology as related to what constitutes 'legitimate knowledge' (Braun & Clarke, 2013, p. 28).

Legitimate knowledge can be seen from two basic epistemological assumptions: objectivism and constructivism (Crotty, 1998). The proponents of objectivism, typically associated with positivist or post-positivist approaches, argue that knowledge is legitimate only when it is discovered through the process of research which requires separation between an observer and what is being observed (Braun & Clarke, 2013). Usually researchers start by selecting a theory, forming hypotheses and then seeking evidence through empirical observation and measurement to accept or reject the hypotheses. This theory verification deductive way of thinking embraces a strong quantitative research approach. In contrast, constructivism assumes that

legitimate knowledge is not discovered but constructed through active involvement of researchers as observers to create an interpretation of what is being observed (Creswell & Clark, 2018; Creswell & Tashakkori, 2007; Fraenkel, Wallen, & Hyun, 2012). Rather than beginning with theories and hypotheses, constructivism inductively develops a pattern of meaning (Creswell & Creswell, 2018). Constructivism is a foundation for a qualitative research approach.

Rather than viewing objectivism and constructivism as two opposite ideas, Johnson and Christensen (2012, 2017) illustrated the philosophical assumption as a continuum, with objective quantitative research on the left side and constructivist qualitative research on the right side. The present study sits in the middle of the continuum – a position known as pragmatism. Pragmatism combines the positive values of objectivism and constructivism to address a research problem (Johnson & Christensen, 2012, 2017).

The most suitable means of obtaining legitimate knowledge within pragmatism is through the use of mixed methods (Creswell & Clark, 2018; Fraenkel et al., 2012; Johnson, Onwuegbuzie, & Turner, 2007). Mixed-methods research in this study allowed a thorough understanding of the impact of constructive alignment on the development of accounting students' competencies by investigating this issue from both quantitative and qualitative perspectives.

3.3 Research Design

The research design in this study can be classified as a counterbalancing two-phase mixed-methods experimental design. A mixed-methods experimental design is a complex mixed methods design that has been expanded from the basic version of the explanatory sequential design (Creswell & Clark, 2018). This design emphasises the quantitative aspect of research (Creswell & Clark, 2018). In this study, the quantitative stage was conducted first, followed by the qualitative stage. In the quantitative stage, the researcher used deductive reasoning and obtained knowledge in a manner that was free from subjective interpretation (Braun & Clarke, 2013). In the qualitative stage, the researcher used inductive reasoning and constructed knowledge through the researcher's involvement in the meaning-making process (Braun & Clarke, 2013).

There are several reasons for selecting a mixed-methods experimental design. First, the research objective and research questions formulated in this study required a combination of quantitative experiment and qualitative methods. Second, while objective thinking was dominant in this study, the study was also interested in deep understanding of the participants' perceptions and investigating why and how an intervention may or may not have worked (Creswell & Clark, 2018). Third, experimental design is recommended by accounting education scholars to examine the effectiveness of an intervention (Apostolou et al., 2020). Figure 3.1 presents the detailed steps conducted in this study's counterbalancing two-phase mixed-methods experimental design.

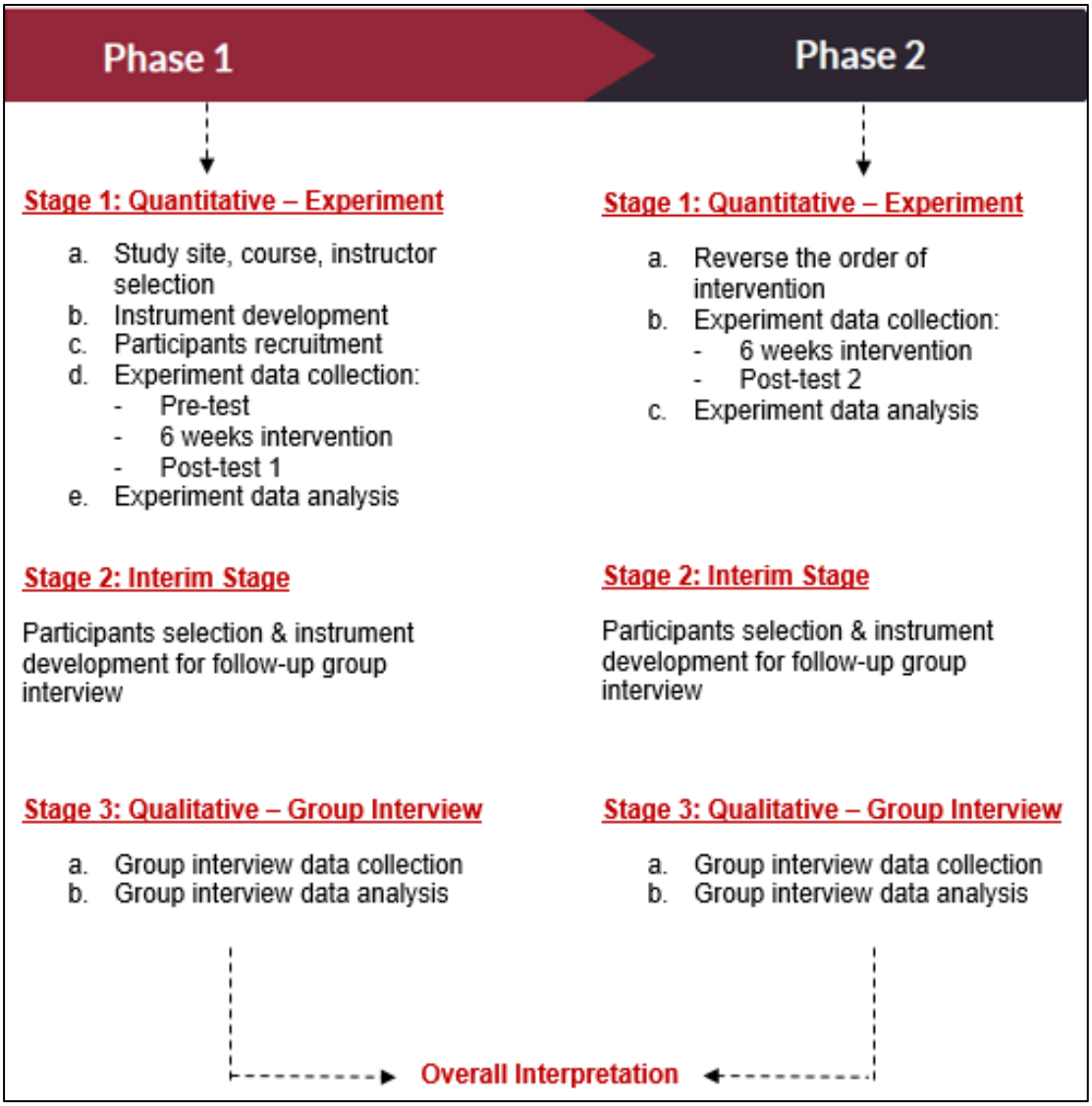

Figure 3.1 The Counterbalancing Two-phase Mixed-methods Experimental Design

The research consisted of two integrated phases: Phases 1 and 2. Phase 2 was conducted upon completion of Phase 1. Each phase consisted of three stages: (1) a six-week quantitative experiment, in which participants were divided into constructive alignment and non-constructive alignment groups; (2) an interim stage to connect the quantitative and follow-up qualitative stages; and (3) a qualitative group interview. The difference between Phase 1 and Phase 2 was the order of the intervention (counterbalancing).

Counterbalancing means reversing the order of the intervention (Field & Hole, 2003). The use of the counterbalancing procedure has several advantages. First, it addresses ethical concerns in the educational research setting. If the study were conducted within one timeframe only (e.g., a between-group, pre-test/post-test design), participants who were not exposed to the 'educational intervention' might have disadvantaged learning outcomes. Therefore, this study split the data collection process into Phase 1 and Phase 2, and the order of intervention was reversed in the second phase of the study (see Figure 3.2 for the detailed research procedures). As a result, all participants were treated equally as they were exposed to the same activities in the constructive alignment intervention group and non-constructive alignment intervention groups, yet at different times during the semester.

The second advantage of counterbalancing is to minimise the effect of confounding variables. Confounding variables are any other factors, apart from the independent variable, that may affect the dependent variable (Field & Hole, 2003; Johnson & Christensen, 2017). Although, in this study, the researcher allocated the participants randomly and held extraneous variables constant (instructor, textbooks, topics, intended learning outcomes and in-class study period), an improvement in participants' performance due to familiarity with the task could influence the findings. If the standard between-groups design were used, the researcher would have been unable to confidently determine whether changes in students' learning outcomes were due to the intervention or familiarity with the task. By splitting the participants into two groups and each group receiving a different intervention in reverse order, the researcher could confidently determine which intervention affected the students' learning outcomes (Field & Hole, 2003).

The third advantage of counterbalancing in this study was to expand the findings of the constructive alignment literature. Prior studies on constructive alignment typically did not explore the ongoing learning experience and performance of students after their exposure to constructive alignment. Thus, the counterbalancing design of this study helped examine whether ongoing support was needed to ensure continuity of competence development. A detailed explanation of the stages in each phase of the study is presented in the following section.

3.3.1 Stage 1: Quantitative – Experiment

The objective of the experiment was to address the first two research questions in the study: (1) Do students studying in a constructively aligned auditing course have a higher level of technical competence improvement than those studying in a non-constructively aligned auditing course? (2) Do students studying in a constructively aligned auditing course have a higher level of non-technical competence improvement than those studying in a non-constructively aligned auditing course? In short, the experiment examined whether or not the intervention affected students' development of technical and non-technical competence. The main constructs of this study were the independent variable of the constructive alignment intervention and the dependent variables of technical and non-technical competence.

3.3.1.1 Study Site, Course and Instructor Selection

The study was conducted in an accounting department of a public university in Indonesia. The accounting department was in the Faculty of Economics—one of eight faculties in the university. When this study was conducted, the department was in the process of redesigning the accounting curriculum to match the requirements of the IAESB. To comply with the IAESB standard, the accounting department needed to specify the learning outcomes that covered technical and non-technical competence. Thus, conducting the study at this site was important to provide an understanding of the effort to align the accounting curriculum with the accounting body's requirement. Another consideration in choosing this site was practical accessibility. The researcher had access and permission to undertake the study in the accounting department. Given that the design of this study was mixed-methods experimental research, the researcher required access to conduct the experiment for the quantitative data collection and

return to participants for qualitative data collection once the experiment was completed.

In terms of the course selection, the 'Auditing 2' course was selected to implement the experiment. Auditing 2 is one of the compulsory courses for accounting students in the department. The accounting department offers two auditing courses for third-year undergraduate accounting students – Auditing 1 is available in the second semester of the academic year, while Auditing 2 is available in the first semester of the academic year. Students enrol in the Auditing 2 course after completing the Auditing 1 course. The researcher did not select the Auditing 1 course to implement the experiment because of timing.

The auditing classes under investigation were taught by an auditing instructor, Mrs Dee, who was one of four Auditing 2 course instructors in the accounting department. Mrs Dee had a professional accounting background, and agreed to participate in the study because she was interested in the topic of this study. She signed the consent form to indicate her agreement to be involved in the experiment. Before implementing the intervention, the researcher informed the instructor about the nature of constructive alignment, the advantages of constructive alignment and the strategy to implement constructive alignment. To provide clear guidance for the implementation, the researcher provided a booklet about constructive alignment and the experiment that the instructor could read in a short time and refer to during the study. The researcher also discussed the implementation of the intervention, at least weekly, with Mrs Dee to mitigate any difficulties during the experiment.

3.3.1.2 Instruments

The instruments for collecting quantitative data were the auditing test and self-assessed competence questionnaire. The auditing test served as the primary instrument, while the self-assessed competence questionnaire complemented the auditing test. Two auditing tests were developed: Shinee Inc. (Appendix C.1) and Infinite Manufacturing (Appendix C2). These auditing tests were adapted from case studies published in a reputable accounting education journal (Andiola et al., 2018; Peaden & Stephens, 2013). Each test was designed to take approximately 95 minutes to complete.

The auditing test administered at the beginning and end of Phase 1 was Shinee Inc. (Appendix C.1). Through this auditing test, students undertook activities to practise auditing accounts receivable. The students in each audit team: (1) performed audit procedures related to accounts receivable; (2) used Excel to complete electronic work papers; (3) wrote an audit memorandum; (4) applied professional scepticism and judgement; and (5) identified and solved an ethical issue.

At the end of Phase 2, students completed another auditing test that covered different topics. The auditing test for Phase 2 was Infinite Manufacturing (Appendix C.2). The Infinite Manufacturing test provided students with an opportunity to practise auditing sales discount. The students in each audit team: (1) performed audit procedures related to sales discount; (2) used Excel to prepare electronic work papers; (3) wrote an audit memorandum; (4) applied professional scepticism and judgement; and (5) identified and solved an ethical issue.

The secondary instrument used to collect quantitative data in the study was a 10-item self-assessed competence questionnaire (Appendix C.3). The questionnaire measured students' perception of their own level of competence. The items in the questionnaire were developed from the IESs, particularly IES 2, 3 and 4 (IAESB, 2017, 2019). In each item of the questionnaire, students were asked to respond on a four-point scale, ranging from 1 (strongly disagree or very incompetent) to 4 (strongly agree or very competent). The 'neutral' scale was not included to eliminate the possibility of participants interpreting the neutral scale in different ways (e.g., 'do not care' or 'do not know') (Chyung, Roberts, Swanson, & Hankinson, 2017). Students were given five minutes to complete the questionnaire. The questionnaire was administered in Phases 1 and 2 of the study. Unlike the auditing test, the questionnaire for both phases was exactly the same.

Early versions of the auditing tests and self-reported questionnaire were tested in a pilot study. The purpose of the pilot study was to determine the clarity of the instruments and the adequacy of the time provided to complete the instruments. The pilot study involved 12 students and two auditing lecturers. The student participants were all final-year accounting students who had nearly finished their study. The auditing lecturers were senior lecturers who had been teaching auditing in the accounting department for more than 10 years.

The researcher provided the instruments for the pilot study in three versions: English, Indonesian and bilingual (English and Indonesia). Administering three versions of the instruments allowed the researcher to determine which version was considered the most convenient instrument for students. The original instruments were in English; however, as the intended participants were Indonesian students, the instruments were translated to Bahasa Indonesia. Before performing the translation, the original English version was presented to the research supervisors to determine the suitability of the instruments. A blind back-translation technique was employed for the translation purpose (Brislin, 1970). First, the researcher translated the original English version of the instruments into Indonesian. Second, the Indonesian version was translated back into English by a bilingual academic staff member in the English department of the university. Two bilingual auditing lecturers from Indonesia checked the translation and did not identify any major variations in interpretation between the original English instruments and the back-translated instruments. Thus, the English version and Indonesian version of the instruments were therefore ready to be administered for a pilot study.

Analysis of the pilot study led to several recommendations. The first recommendation was related to the language. The participants strongly suggested that the auditing test (especially the case materials) and the self-assessed competence questionnaire be administered in the Indonesian version only. The English version was perceived by the pilot study participants as difficult to understand, which could increase the probability of students' misunderstanding and non-response, thereby diminishing validity. The participants stated that the bilingual instruments should also be avoided because students would have to allocate extra time to read the instruments, thus reducing students' opportunity to complete the test on time. The pilot study participants strongly believed that the use of the Indonesian version only was appropriate for the time allocated.

The next recommendation was related to the length of the instruments. The content of the auditing test was relevant to the context of auditing in Indonesia. However, the pilot study participants suggested reducing the number of questions in the auditing test because of time concerns. For example, six review notes in the Shinee Inc. auditing test could be reduced to five review notes. Regarding the self-assessed

questionnaire, the participants found the statements in the questionnaire clear and suitable for the time allocated.

In addition to the language and content aspects, the pilot study participants' views on the technical aspects of administering the instruments were also taken into account. Given the complexity of the auditing test, they suggested that the test materials be provided in two forms: hard copy and digital copy. They reasoned that the process to verify the accuracy of audit evidence would take a long time, unless a digital copy (i.e., Excel file) was provided. Further, they recommended that students in each team be provided with a USB flash drive to store the students' answers related to the electronic work paper (Excel file). By providing USB flash drives, the researcher could collect the digital data easily.

All suggestions received in the pilot study provided useful input for the researcher to adjust the instruments in response to the feedback. The researcher revised the language in the instruments, the length of the test, and the technical aspects of administering the instruments. After revision, the instruments were ready to be administered in the primary investigation.

Table 3.1 presents the links among the research questions, the dependent variables and the study instruments. All competence areas in the dependent variables were represented in the instruments, except for the competence in the area of teamwork. Teamwork was measured in the questionnaire, but not in the auditing test. The auditing test required students to work as a team, but their teamwork performance was not measured in the auditing test.

Table 3.1 Research Questions, Dependent Variables and Study Instruments

Research Questions	**Dependent Variables**	**Instruments**	
		Self-assessed Competence Questionnaire (4-point scale)	**Auditing Test** (max. score 100)
1. Do students studying in a constructively aligned auditing course have a higher level of technical competence improvement than those studying in a non-constructively aligned auditing course?	Technical competence		
	• Audit	Items 1 and 2	Apply audit procedures
	• Information technology	Items 3 and 4	Use Excel to create electronic work papers

2. Do students studying in a constructively aligned auditing course have a higher level of non-technical competence improvement than those studying in a non-constructively aligned auditing course?	Non-technical competence		
	• Written communication	Item 5	Communicate in written form to create an audit memorandum
	• Teamwork	Item 6	Work in an audit team *(teamwork was not measured in the auditing test)*
	• Professional scepticism and judgement	Items 7 and 8	Apply professional scepticism (misstatement detection) and judgement (decision explanation)
	• Ethics	Items 9 and 10	Identify and solve an ethical issue

3.3.1.3 Participant Recruitment

Before recruiting participants, the researcher obtained formal permissions from the Dean of the Economics Faculty and the Head of the Accounting Department. The researcher described the purpose, significance, and methodology of the study and explained that the study had been granted ethical approval (HRE2018-0499) from the Human Research Ethics Committee (Appendix A.1). Once the formal permissions from the institution were received (Appendix A.2), the researcher began recruiting participants.

Recruitment was conducted by posting an electronic announcement on the accounting department website (Appendix B.1). The announcement was also linked to the students' credential portal. The announcement was released one week prior to the enrolment period (academic year 2018/2019). Students could access the information statement and consent form through the link provided in the announcement. The objective of the announcement was to help students understand the following. First, the Auditing 2 course offered in Semester 1 2018/2019 and taught by an audit instructor (Mrs Dee) would include a research project. Second, participation in the research was voluntary and would not affect students' grades. The researcher would collect and analyse the data from a series of tests only (pre-test, post-test 1 and post-test 2). Students' responses to these tests would be confidential, which meant no individual results would be shared with the instructor. None of the test results would affect students' final grade. Students' grade would be determined by the instructor's assessment during the learning process each week. Third, students would not be taught

by the researcher, but by the audit instructor, to demarcate research from teaching. Fourth, students could cease to participate in the tests at any stage during the research.

According to the university's data, 521 third-year undergraduate accounting students were eligible to participate in the research. These students had all completed the Auditing 1 course and were eligible to enrol in the Auditing 2 course. In total, 179 students (34.4%) agreed to participate, as indicated by the total enrolment in Mrs Dee's Auditing 2 course (see Table 3.2). Non-participating students enrolled in Auditing 2 courses were taught by other instructors. Participating students signed the consent form and returned the form to the accounting department office. The university enrolment system randomly assigned participants into Classrooms A to D. Classrooms A and B were clustered into Group AB, while Classrooms C and D were clustered into Group CD.

Table 3.2 Enrolment Breakdown in Auditing 2 Course

Class	Group	Number of Students	Number of Students in Each Group	Number of Teams in Each Class*	Number of Teams in Each Group
A	AB	43	89	21	44
B		46		23	
C	CD	45	90	22	44
D		45		22	
	Total	179	179		88

** Students were required to work in a team of two students to complete the auditing test. Given the odd numbers of students in Classes A, C and D, there was one team consisting of three students in each class.*

3.3.1.4 Quantitative Experiment Data Collection

Quantitative data for this study were collected three times: before the intervention (pre-test), after the intervention in Phase 1 (post-test 1) and after the intervention in Phase 2 (post-test 2). The sequence procedure of data collection is depicted in Figure 3.2.

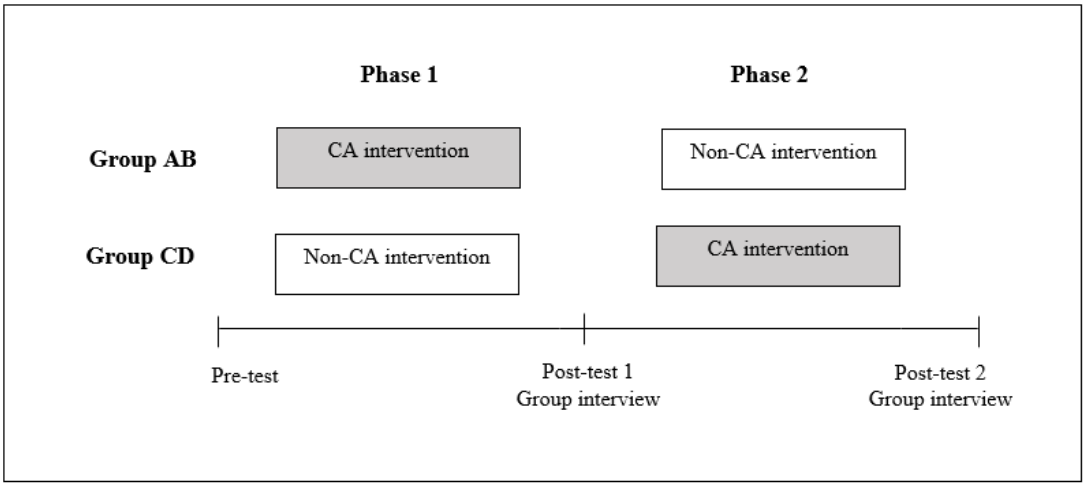

Figure 3.2 Research Procedure

Pre-test

Prior to the intervention, students in both groups were asked to undertake a pre-test. The pre-test was conducted to analyse students' prior knowledge before they completed the course. The pre-test consisted of a self-assessed competence questionnaire and an auditing test—Shinee Inc. The questionnaire was administered to the participants individually, so the total number of collected questionnaire was 179. In contrast, the auditing test required students to work in a team of two students to promote teamwork competence. Given that three classes had an odd number of students (see Table 3.2), three teams consisted of three students. Therefore, the total number of tests collected from the auditing test was 88 – 44 from the constructive alignment intervention group and 44 from the non-constructive alignment intervention group. The questionnaire and auditing test were administered and collected from all groups by two research assistants.

Intervention

In Phase 1, 89 students in Group AB received the constructive alignment intervention, while 90 students in Group CD were taught in the traditional approach or non-constructive alignment intervention. In Phase 2, Group CD received the constructive alignment intervention and Group AB did not. This counterbalancing procedure provided opportunities for all participants to experience the constructive alignment intervention, yet at different times during the experiment. The intervention in each phase was six weeks. The instructor, topics, in-class study period, textbooks, intended learning outcomes and final/summative assessment task were the same for

both groups (see Table 3.3). The main difference between the constructive alignment and non-constructive alignment intervention was the degree of alignment.

Table 3.3 Intervention Elements

Description	Constructive Alignment Intervention	Non-constructive Alignment Intervention
Participants (counterbalancing procedure)	Phase 1: Group AB Phase 2: Group CD	Phase 1: Group CD Phase 2: Group AB
Instructor: Auditing instructor (Mrs Dee)	✓	✓
Topics: Phase 1: - Introduction to Auditing 2 - Testing of controls - Designing substantive procedures - Substantive testing of cash - Substantive testing of accounts receivables - Substantive testing of inventory Phase 2: - Substantive testing of property, plant and equipment (PPE) - Substantive testing of revenue - Completing and reporting on the audit	✓	✓
Textbooks: - *Auditing Textbooks* (in English) - *Auditing Standards* (in Indonesia)	✓	✓
In-class study period/week: Three hours	✓	✓
Language of instruction: Bahasa Indonesia	✓	✓
Intended learning outcomes: Targeted the development of technical and non-technical competence	More clarity on intended learning outcomes	Less clarity on intended learning outcomes
Teaching and learning activities	Auditing case studies (support the intended learning outcomes) Phase 1: - Cloud 9 - Rosie's East End Restaurant - Key considerations in the audit of inventory Phase 2: - Shoe Zoo - Vouch and Trace	Lecturing and students' presentations (not supporting the intended learning outcomes)
Assessment task: Summative assessment targeted technical and non-technical competence	Summative assessment aligned with intended learning outcomes and teaching-learning activities	Summative assessment aligned with intended learning outcomes, but misaligned with teaching-learning activities
Feedback	Feedback on technical and non-technical competence	Feedback on students' presentations

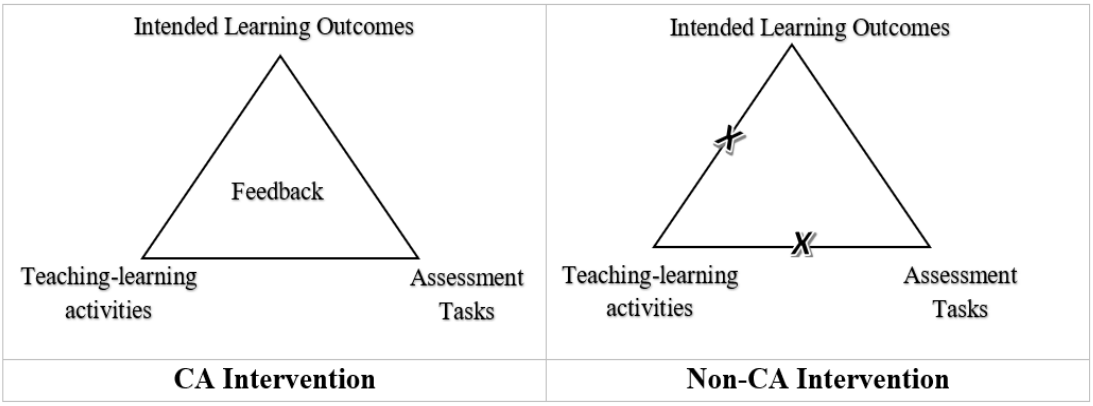

Figure 3.3 Study Intervention Scenarios

Constructive Alignment Intervention

In the phase where students received the constructive alignment intervention, they studied in an aligned system. This meant that all components of the course design (the intended learning outcomes, teaching–learning activities and assessment tasks) supported one another (see Figure 3.3). The intended learning outcomes targeted the development of technical and non-technical competence. Students received greater clarity on the intended learning outcomes than did students in the non-constructive alignment group. The lecturer explained the expectation of the course as described in the syllabus, and regularly reminded students about that expectation in each meeting.

Moreover, students engaged in teaching–learning activities that addressed the intended learning outcomes. They mainly worked as a team to solve auditing case studies each week. In each of the case studies, students demonstrated their competence in terms of audits, technology, communication, professional scepticism and judgement, and ethics. Their activities to complete the case studies each week were assessed as formative assessment. Given the complexity of the case studies, students were encouraged to: (1) learn the auditing case studies and the auditing theory before meeting in the classroom; (2) collaborate with their team to complete the auditing case studies; and (3) actively participate during classroom discussions.

The final assessment of each phase was a summative assessment. Students were assessed on their competencies by means of the auditing case studies, which

specifically addressed attainment of the intended learning outcomes. To strengthen the alignment system, feedback was given to students for each completed auditing case study assignment. Students received written feedback and oral feedback from the instructor. The feedback aimed to help students identify their mistakes and provided suggestions for improvement.

Non-constructive Alignment Intervention

When students received the non-constructive alignment intervention, they studied in the non-aligned system that was historically implemented in the auditing course. There was a lack of alignment in the component of course design (see Figure 3.3). The intended learning outcomes indicated the expectation for students to develop technical and non-technical competence, but the teaching–learning activities did not address this expectation. Students mainly received lectures and were involved in group presentations that focused on content knowledge. They did not learn other competencies, such as information technology and written communication. The syllabus for Phase 2 was given to students, but the instructor did not explain the intended learning outcomes of the course to students. The final/summative assessment was the same as that in the constructive alignment intervention group. Therefore, there was a misalignment between the assessment tasks and teaching–learning activities. With regard to feedback, students in the non-constructive alignment intervention group received feedback only on their presentation performance.

Post-test 1

At the end of Phase 1, all students in both groups completed post-test 1 using the same procedures and same instruments as earlier in the pre-test. The instruments were a self-assessed competence questionnaire (Appendix C.3) and auditing test Shinee Inc. (Appendix C.1). It was possible that the use of an identical auditing test in the pre-test and post-test 1 could create increased learning outcomes and threaten the internal validity of the experiment. However, because the researcher kept the results of the pre-test confidential and there was a six-week gap between the pre-test and post-test, threat to internal validity was unlikely (Field & Hole, 2003).

Post-test 2

After the six-week intervention in Phase 2, both groups were instructed to complete post-test 2, which consisted of a self-assessed competence questionnaire (Appendix C.3) and the Infinite Manufacturing auditing test (Appendix C.2). The test administered in post-test 2 was different to that in post-test 1 because of the different topics presented in the experimental stage of Phase 2. Nevertheless, both tests were similar in terms of difficulty level.

3.3.1.5 Quantitative Experiment Data Analysis

To analyse the data from the auditing test, students' answers to the auditing test were assessed manually using scoring rubrics (Appendix D). The researcher and two research assistants with accounting backgrounds collaborated to assess students' answers. The data were input into the Statistical Package for the Social Sciences (SPSS) version 26.0 for statistical analysis. The analysis included descriptive statistics (mean, standard deviation and mean difference) and inferential statistics (paired samples t-test and independent samples t-test).

A paired samples t-test and independent samples t-test were performed to determine any differences of competence within groups and between groups, respectively. To assess the effectiveness of the intervention, changes (gain scores) from pre-test to post-test 1 and post-test 1 to post-test 2 were calculated. The independent samples t-test on the gain scores from the groups was then computed (Gliner, Morgan, & Harmon, 2003). The focus of this approach of analysis was on the improvement or development of students' performance, rather than the absolute scores of the pre-test and post-test.

The t-test is a parametric test that is constrained by the assumption of normal distribution. Therefore, a normal distribution test was performed before the t-test to ascertain that this assumption had been met for the given sample. The Kolmogorov-Smirnov test was used to test the normality of the data, as this test is one of the most frequently used tests to evaluate normality and is available in SPSS (Drezner, Turel, & Zerom, 2010).

To analyse the data from the self-assessed competence questionnaires, the descriptive statistics (mean, standard deviation and percentage) of students' responses to each of the competence areas in the questionnaire were calculated. The descriptive statistics provided information about students' self-perceived level of competence at different points of time: pre-test, post-test 1 and post-test 2. Students' self-assessments of their competence were then compared between groups by using the Mann-Whitney U test. The Mann-Whitney U test was used because the data pertaining to students' self-reported competence were ordinal in nature. To assess the effectiveness of the intervention, the Mann-Whitney U test of the gain scores from the two groups was computed (Gliner et al., 2003).

3.3.2 Stage 2: Interim Stage

The intent of this interim stage was to use the result of the quantitative experiment to inform the design of the qualitative group interviews (see Figure 3.1). Linking the results of one stage to design the procedures for another stage is an important process to ensure integrations occur in a mixed-methods study; otherwise, one of the stages may seem to be an add-on (Creswell & Clark, 2018; Fraenkel et al., 2012; McCrudden, Marchand, & Schutz, 2019).

This study used two strategies to link the quantitative stage to the qualitative stage. The first involved using the quantitative data to identify the participants for the qualitative group interview. The second involved using the quantitative data to modify the interview questions to collect the qualitative data. The first strategy is a form of integration known as connecting, while the second strategy is a form of integration known as building (Fetters, Curry, & Creswell, 2013; McCrudden & McTigue, 2019).

In Phase 1, one specific finding of the experiment was the significant improvement of competence in the group that received the constructive alignment intervention. Based on this finding, the researcher targeted the students who received the constructive alignment intervention (Group AB) to participate in a group interview. The researcher purposely selected eight participants whose improvement was above and below the average improvement of the group. The researcher contacted the students, and then provided the information statement and consent form to them

(Appendix B.4). All targeted students signed the consent form, indicating their agreement to participate in the group interview.

The instrument for the qualitative group interview was a semi-structured interview protocol. The interview protocol covered five aspects: the intended learning outcomes, teaching–learning activities alignment, assessment tasks alignment, feedback and perceived learning outcomes. The first four aspects have previously been used to guide research investigating students' perceptions of the implementation of constructive alignment (e.g., Fitzallen et al., 2017; Stamov Roßnagel, Fitzallen, & Lo Baido, 2020). The purpose of including the fifth aspect (perceived learning outcomes) was to understand how students perceived the effect of the constructive alignment intervention on their competence development. The interview protocol was tested in the pilot study together with the instruments for the experiment. Following suggestions from the participants in the pilot study, several adjustments were made. Examples include the use of Bahasa Indonesia instead of English and providing participants with a printed hardcopy of the interview protocol to help them understand the questions.

Upon completion of the experiment in Phase 1, the researcher considered the results of the experiment to create new interview questions, such as asking students to explain which aspect of the constructive alignment intervention had the largest effect on their development of competence, and why their improvement of ethics competence was not significantly different from that of the non-constructive alignment intervention group. The details of the interview protocol are provided in Appendix C.4.

The result of the experiment in Phase 2 was similar to that of Phase 1. Students who received the constructive alignment intervention improved their competence more than students in the non-constructive alignment group. However, there was an indication that, when the constructive alignment intervention was not being sustained, students' competence declined. With this result, the researcher decided to undertake interviews not only with the students in the constructive alignment intervention group (Group CD), but also with students in the non-constructive alignment intervention group (Group AB). Group AB previously received the constructive alignment intervention in Phase 1 and sequentially did not receive the constructive alignment intervention in Phase 2. Thus, the decision to expand the interviews to the non-constructive alignment intervention group in Phase 2 also allowed the researcher to

understand the effect of ceasing the constructive alignment intervention on the development of students' competence.

The process of recruiting participants for the Phase 2 group interview followed the same procedure as in Phase 1. Eight students in each group were contacted. However, only six students from the constructive alignment intervention group and six students from the non-constructive alignment intervention group agreed to participate, as most students left for their native hometowns directly after completing post-test 2, which marked the end of the academic semester.

The semi-structured interview protocol for the Phase 2 group interview was modified in line with the results of the experiment. The researcher added questions for the non-constructive alignment intervention group, such as: 'What did you do after we stopped the constructive alignment intervention in Phase 2?'. The interview protocol can be found in Appendix C.4.

3.3.3 Stage 3: Qualitative Group Interview

Creswell and Clark (2018) suggested that the qualitative aspect in a mixed-methods experimental design can be conducted before, during or after the experiment. Given that the aim of the qualitative group interview stage was to address the third research question – 'How do students perceive the effect of studying in a constructively aligned auditing course on their competence development?' – the study treated the qualitative aspect as a follow-up to the experiment, as it occurred after the experiment.

Although an interview can be conducted either with one person at a time or with a group, a group interview provides a more natural setting for participants because participants are seated together, share their experiences about certain issues, hear the views of others and consider their own views accordingly, just as they do in real life (Dilshad & Latif, 2013; Fraenkel et al., 2012). In addition, a group interview helps the researcher understand the collective insights of participants in a social context, which will likely be more beneficial than individual insights (Creswell, 2012; Fraenkel et al., 2012). Hence, group interview was used to collect the data in Stage 3.

3.3.3.1 Qualitative Group Interview Data Collection

Each group interview lasted for approximately two hours. The first and second group interviews were conducted in a room at the accounting department that was convenient for the participants. However, the third group interview was conducted online through a real-time online group interview because the researcher and students could not meet in the same location. According to Fox (2017), interviewing participants using online group interview is an appropriate substitute for participants who are unable to attend a face-to-face group interview.

At the beginning of the interview, the researcher informed the students of the purpose of the study and reminded them that their participation was voluntary, and that they were free to withdraw from the study at any time. Confidentiality was ensured by explaining to the participants that their identity would be omitted from the report of the findings. The researcher then asked participants the main questions, as written in the interview protocol. The interview protocol was also given to the participants to help them recall their experiences more easily. This was a semi-structured interview; thus, the questions and order of the questions may not be exactly the same as in the interview protocol, depending on the participants' responses. The interviews were conducted in Bahasa Indonesia. The researcher used a digital voice recorder to record the interview.

3.3.3.2 Qualitative Group Interview Data Analysis

Interview data were transcribed verbatim by two research assistants. The researcher then checked the accuracy of the transcripts against the audio recording. Thematic analysis was used to analyse the data. Thematic analysis is 'a method for identifying, analysing, and reporting patterns (themes) within data' (Braun & Clarke, 2006, p. 79). Using Braun and Clarke's six-phase model of thematic analysis, the researcher worked within the constructivism paradigm and used inductive reasoning. According to Creswell and Clark (2018), such an approach works best to construct a pattern of meaning.

Thematic data analysis includes six phases: familiarising oneself with the data, generating codes, constructing themes, reviewing potential themes, defining themes and producing a report (Terry, Hayfield, Clarke, & Braun, 2017). The phases are not intended to be a rigid procedural practice. Researchers often go back and forth to obtain

a thorough understanding of the qualitative data (Braun, Clarke, Hayfield, & Terry, 2019; Terry et al., 2017). In the first phase of thematic analysis – familiarising with the data – the researcher completed multiple readings and made casual notes of the interview transcripts to develop a holistic sense of the data. After reading the transcript, the researcher noticed early that participants felt constructive alignment was beneficial for their competence development. Following the advice from Terry et al. (2017), the researcher did not convert the first insight from the data directly into a theme because this can risk the quality of a study. Researchers should identify the patterns across the data by following the next phases of thematic analysis.

In the second phase of thematic analysis – generating codes – the researcher created initial codes to label participants' explanations of their learning experience. A code is 'an analytic unit or tool, used by researcher to develop (initial) themes … that capture (at least) one observation, display (usually just) one facet' (Braun & Clarke, 2020, p. 13). Coding is a systematic process for identifying relevant data and then labelling it with a few words or a phrase to capture the researcher's interpretation of the data (Terry et al., 2017). In this study, coding was conducted with an inductive orientation, which involves coding being directly obtained from the data, rather than being predetermined by the researcher based on existing concepts. Braun et al. (2019) described thematic analysis with inductive orientation coding as a reflexive thematic analysis, which draws different characteristics from thematic analysis using a codebook approach and coding reliability.

In the third phase – constructing themes – codes that were similar or had a relationship were categorised into initial themes. Unlike codes, which usually capture one observation or facet, themes capture multiple observations that show patterns of shared meaning (Braun & Clarke, 2020). The fourth phase was thematic review. Reviewing themes involved checking or modifying the initial themes that had been created in the previous step. In this process, the researcher ensured that each theme captured patterns of shared meaning, created a story about the data, and was supported by sufficient data. In the fifth step of defining themes, the meaning of each theme was clearly defined. The final step of thematic analysis involved producing a report. The thematic analysis report of the group interview data is presented in the results chapter.

3.3.4 Integration

An essential feature of mixed-methods research is the integration of quantitative and qualitative aspects throughout the research process (Bazeley, 2018; Johnson et al., 2007; McCrudden et al., 2019). The purpose of this integration is to provide a more comprehensive understanding of the study that is difficult to achieve from a pure quantitative or a qualitative study (McCrudden et al., 2019). Integration of data and analysis should occur before the final conclusion is made, otherwise the research is not a genuine mixed-methods study (Bazeley, 2018).

This study achieved the integration at three levels, based on the idea of Fetters et al. (2013). Among a variety of useful approaches to address how researchers can achieve integration in mixed-methods research, Fetters et al.'s approach is considered most practical for novice researchers (McCrudden & McTigue, 2019). According to Fetters et al. (2013), integration can occur at three levels: the study design level, methods level, and interpretation and reporting level. In this study, integration at the study design level was achieved by combining the quantitative and qualitative approaches to address the research problem. Moreover, integration at the methods level involved connecting the results from the quantitative stage to inform the design of the qualitative stage, as described in the interim stage. Integration at the interpretation and reporting level occurred when the researcher merged the results of the quantitative and qualitative data to draw integrated conclusions.

At the final level of integration, the researcher implemented integration through narrative, whereby quantitative and qualitative data were initially reported in separate sections. The results of the experiment were presented, followed by the results of the group interviews. The discussion chapter integrates both aspects to answer the research questions.

3.4 Validity in Mixed-methods Research

Possible threats to the validity of mixed-methods research should always be considered to ensure the trustworthiness of the results (Creswell & Clark, 2018; Fraenkel et al., 2012). Given that there is more than one type of mixed-methods research, researchers should contend with threats to validity that are specific to each

type of mixed-methods research (Creswell & Clark, 2018). Validity threats related to the mixed-methods experimental design include internal and external validities (Creswell & Clark, 2018).

Internal validity in an experimental study occurs when a study can demonstrate an unambiguous explanation for the effect of the intervention on the dependent variables (Gravetter & Forzano, 2018). To maximise the internal validity of the experiment, the researcher implemented the following strategies in this study:

- Developing a sound procedure: This study used a counterbalancing experimental procedure, which, according to Fraenkel et al. (2012) provides strong controls to almost all internal validity threats, such as subject characteristics, mortality, history, maturation, attitude of subjects and regression.
- Randomisation: Randomly allocating students to Groups AB and CD by the university enrolment system helped ensure group equivalence. Randomisation is the best way to isolate the effect of the independent variable (Field & Hole, 2003; Fraenkel et al., 2012).
- Controlling confounding variables: The researcher controlled factors outside the independent variable that could generate alternative explanations for the change in dependent variables. The constructive alignment and non-constructive alignment intervention groups had the same instructor, textbook, course topics, in-class study period, intended learning outcomes and summative assessments. The only difference between these groups was the degree of alignment.
- Separating research from teaching: The separation between teaching and research employed in this study is called a ‘double-blind technique’ (Field & Hole, 2003, p. 61). This is an important technique in experimental design to minimise researcher bias and increase the internal validity of a study. In this double-blind technique, the researcher was not involved directly in teaching the students. Students were taught by an auditing instructor. The instructor and students were unaware of the results of the pre-test and post-test, so they behaved naturally in the teaching and learning setting. Thus, the researcher was unlikely to bias the results in this case.
- Adopting valid instruments: The researcher used established instruments that had been implemented and validated. The auditing test for pre-test and post-test 1 was adapted from the auditing case study by Andiola et al. (2018). Post-test 2 was

adapted from the auditing case study by Peaden and Stephens (2013), and the self-assessed questionnaire was derived from the 2017 pronouncement of IESs (IAESB, 2017). The instruments were pilot tested with a small number of students and academics prior to the data collection.

External validity refers to the extent to which the results of an experiment can be replicated in other settings (Fraenkel et al., 2012; Gravetter & Forzano, 2018). In this study, the researcher provided a detailed description of the research and its context. The students who participated in the study were third-year undergraduate accounting students in a public university. The findings of this study can be applied to other settings with similar situations. In addition, the experiment was conducted in a natural setting. The participants were students who were normally confronted with learning stimuli and the instructor was a lecturer who usually taught an auditing course. Both students and instructor behaved naturally in the teaching and learning activities. The researcher did not intrude directly in the experiment setting. The experiment used an intervention that reflected education's everyday practice. Therefore, the intervention and the results of this study may be extended to any educational setting – particularly those with a professional education orientation.

3.5 Ethical Issues in Mixed-Methods Research

The mixed-methods researcher must address ethical issues, as in other research methods (Teddlie & Tashakkori, 2009). This study involved students participating in an experiment and interviews. According to the *National Statement on Ethical Conduct in Human Research* (Australia Government, 2015), research conducted with people must comply with ethical conduct. The following descriptions indicate some strategies that were used to address ethical concerns.

Approval to conduct the study was obtained from the Curtin University Human Research Ethics Committee (HREC number HRE2018-0499) and from the institution under investigation (Appendices A.1 and A.2). To mitigate the risk of students feeling they had to participate, the researcher recruited participants through an announcement on the accounting department's website at the beginning of the course enrolment period. The announcement helped students understand that participation in the study was voluntary and they were free to withdraw from participating in the tests at any

stage during the study. The researcher had no special relationship with the participants. Although the researcher undertaking the recruitment was a lecturer at the university at which the study was conducted, the researcher had no direct access to or physical contact with the invited students, and had never taught the invited students.

To protect the participants' rights during data collection, the researcher provided an informed consent statement for the instructor, the participants of the experiment, and the interviewees to sign before they committed to taking part in the research. To ensure minimal disruption to the teaching and learning process, the activities to collect data through post-test 1 and post-test 2 were administered at the same time as the conduct of the middle and final semester examination. To treat students equally, the study employed a counterbalancing experimental procedure, meaning that students in both groups experienced the constructive alignment intervention and non-constructive alignment intervention in a different order.

One of the risks of participating in the experiment was the time involved in completing the pre-test, post-test 1 and post-test 2. The tests took approximately 100 minutes each to complete. Students were free to cease completing the tests at any stage. The risks in the group interview included the time involved in participating in a group interview, and the potential of feeling discomfort during the interview. However, the topic of the interview was not a sensitive issue—it was a general topic related to participants' learning experience. If students felt discomfort, they were free to cease the interview at any stage. This was made clear in the information statement and explained orally. In addition, the data collected from the experiment and group interviews did not influence the final grade of the students. The final grade was determined by the instructor's assessment.

To guarantee the anonymity and confidentiality of the participants, the researcher replaced the names of all participants with a pseudonym during data analysis and write-up of the thesis. Detailed information about the participants and the data was restricted to the researcher.

3.6 Summary

This chapter has described each aspect of the methodology in detail. Pragmatism was selected as the epistemological assumption for the study. Given that pragmatism focuses on what works best to address the research problem, a mixed-methods counterbalancing experimental design was applied. There were two phases in the study that ran sequentially – Phase 1 and Phase 2. Each phase represented the idea of mixed methods – that is, the quantitative experiment, the qualitative group interview, and the connection and integration between the quantitative and qualitative aspects. This chapter has provided an explanation of the procedures used in each phase of the study, the mechanism to ensure validity and the ethical considerations. The results from the data collected are described in the following chapter.

CHAPTER 4
RESULTS

4.1 Introduction

This counterbalancing two-phase experimental study collected quantitative and qualitative data during each phase. Quantitative data were collected from the instrument of auditing test and self-assessed competence questionnaire, and qualitative data were collected from group interviews. This chapter is structured to present the quantitative and qualitative results of the study. It begins by describing the demographic data of the participants in Section 4.2. The following Sections 4.3 to 4.5 describe the quantitative results related to the students' development of technical competence and non-technical competence. This is followed by a description of the qualitative results of the study in Section 4.6. The final section, Section 4.7, summarises the results discussed in this chapter.

4.2 Demographic Data

A total of 179 third-year undergraduate accounting students participated in the study. As described in the methodology chapter, the participants were randomly assigned into four classes: Class A, B, C and D. Class A and B were combined into Group AB, which in Phase 1 received constructive alignment intervention and in Phase 2 received non-constructive alignment intervention. Class C and D were clustered into Group CD, which received the reverse intervention to Group AB.

Table 4.1 presents the demographic data of the students in both groups, who were comparable in terms of gender and age. With nearly 80%, female students dominated the cohort. The average age of the students was 21 years in both groups. The similar demographic data of both groups indicated that comparisons between the groups were plausible on this basis.

Table 4.1 Demographic Characteristics of Study Participants

Demographic Criteria	Group AB *N* = 89	Group CD *N* = 90	Total Participants
Gender			
Male	20 (22%)	19 (21%)	39 (22%)
Female	69 (78%)	71 (79%)	140 (78%)
Total	89 (100%)	90 (100%)	179 (100%)
Age			
20	3 (3%)	1 (1%)	4 (2%)
21	86 (97%)	88 (98%)	174 (97%)
22	0 (0%)	1 (1%)	1 (1%)
Total	89 (100%)	90 (100%)	179 (100%)
Average	21	21	21

4.3 Quantitative Results: Technical Competence

This section presents the results related to the students' development of technical competence, which consisted of audit and information technology. Students were assessed three times throughout the study. The first assessment was before the intervention (pre-test). The second assessment was after the completion of Phase 1 (post-test 1) and the third assessment was after the completion of Phase 2 (post-test 2). Data were collected through the auditing tests and a self-assessed competence questionnaire.

4.3.1 Results of Auditing Test

The auditing test required students to work in pairs, which were organised randomly. Given the uneven number of students in each classroom, three teams had three members (see Table 3.2). Eighty-nine students in Group AB were organised into 44 teams. The same number of teams (44) constituted Group CD. Thus, the computation of the auditing test data used the total number of teams, instead of the total number of individual students.

In relation to the audit and information technology technical competence dimensions, students were asked to demonstrate their competence by performing audit procedures and using Microsoft Excel to complete electronic work papers. Specifically, in the auditing test, Shinee Inc., which was administered before the intervention and at the end of Phase 1, students had to undertake an audit of accounts receivable. Meanwhile, another test, Infinite Manufacturing, was administered at the

end of Phase 2 and required students to perform audit procedures on sales discounts. The analyses of students' technical competence test scores are presented below.

Preliminary analysis revealed that the data followed the normality distribution assumption, as assessed by the Kolmogorov-Smirnov normality test (Appendix F). Therefore, parametric analysis was selected to examine the difference of competence between groups and within groups. In particular, the independent samples t-test was used to determine if a statistical difference in mean scores existed between students in the constructive alignment group versus students in the non-constructive alignment group. In addition, the paired samples t-test was used to test the difference of means within a group. To assess the effectiveness of the intervention, the independent samples t-test on gain scores was computed so that the focus was on the improvement or development, rather than the absolute scores of the pre-test and post-test. An alpha level of .05 was used for all statistical tests.

Table 4.2 presents the statistics of students' audit competence. Prior to the intervention, students in both groups had similar levels of competence. The mean score of auditing in Group AB was 32.7 and in Group CD was 35.4 on a scale of 0 to 100. The difference of means between groups was not significant (p = .304). This result validated the process of randomness in the group member distribution. After completing the experiment in Phase 1, students in Group AB who received the constructive alignment intervention obtained a higher mean score (72.4) than did students in Group CD who did not receive the constructive alignment intervention (53.2). The statistical difference indicated that the means between groups were significantly different (p < .05).

Table 4.2 Results of Test on Technical Competence: Audit

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	32.7	24.0			35.4	25.7			2.7	0.304	
Phase 1	72.4	12.2	*39.7*	*0.000*	53.2	24.6	*17.8*	*0.000*	19.2	0.000	*0.000*
Phase 2	60.5	24.4	*-11.9*	*0.002*	57.2	20.4	*4*	*0.180*	3.3	0.246	*0.009*

The results of the auditing test post-Phase 2 revealed an interesting finding. When students in Group AB did not receive the constructive alignment intervention, their auditing test score decreased significantly (M = 60.5, p = .002). In contrast, students in Group CD who were exposed to the constructive alignment intervention in Phase 2 of the study slightly improved on their auditing scores, yet the mean score (57.2) was below that in Group AB (60.5). The difference in means between groups was not significant (p = .246). However, the analysis of gain scores across the two study phases revealed that, in each phase of the study, students who received the constructive alignment intervention gained higher improvement in audit competence than did students in the non-constructive alignment intervention group (p < .05).

The statistics of the students' technology competence are depicted in Table 4.3. Before the intervention, the mean technology score for students in Group AB was 3.4, slightly higher than that for Group CD (1.3). However, the mean difference was not significant (p = .053). With a maximum score of 100, this result indicated that both groups had the same low level of technology competence prior to the intervention.

Table 4.3 Results of Test on Technical Competence: Information Technology

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	3.4	7.7			1.3	4.1			2.1	0.053	
Phase 1	40.9	23.7	*37.5*	*0.000*	18.4	19.7	*17.1*	*0.000*	22.5	0.000	*0.000*
Phase 2	60.0	30.9	*19.1*	*0.001*	45.4	33.9	*27*	*0.000*	14.6	0.019	*0.306*

After completing Phase 1, students in Group AB showed a significant increase in the mean score of technology competence after the constructive alignment intervention (M = 40.9, MD = 37.5). Students in Group CD also showed improvement (M = 18.4, MD = 17.1); however, the improvement was not as great as that made by students in Group AB. In line with the results in the area of audit competence, the statistical difference between groups in Phase 1 indicated that the mean technology scores were significantly different (p < .05). The improvement made by Group AB was significantly higher than that of Group CD, as indicated by the p-value gain scores (p < .05).

In Phase 2, the mean score of students in Group AB was 60.0, whereas the mean score of students in Group CD was 45.4. The *p*-value for the difference between groups was .019, which indicated a significant difference in the mean score in the area of technology competence. However, the difference in gain scores between groups from Phase 1 to Phase 2 was not significant ($p = .306$).

Table 4.4 displays the overall statistical results of the students' technical competence measurements. In general, the students' development of technical competence in both groups increased gradually (see Figure 4.1). Starting at a similar level of technical competence prior to the intervention (Group AB: $M = 18.1$; Group CD: $M = 18.4$), both groups significantly improved after completing Phase 1 (Group AB: $M = 56.6$; Group CD: $M = 35.8$). A statistically significant difference was found between groups ($p < .05$), indicating that students who received the constructive alignment intervention developed significantly higher technical competence than did students who did not receive the constructive alignment intervention.

The pattern of improvement was continued to the end of Phase 2; however, the improvement made by Group CD, who received the constructive alignment intervention in Phase 2, was significant ($MD = 15.5$, $p < .05$), while the improvement made by Group AB, who did not receive the constructive alignment intervention, was not significant ($MD = 3.6$, $p = .218$). This indicated that, in Phase 2, the improvement made by students who received the constructive alignment intervention (Group CD) was significantly greater than those who did not receive the constructive alignment intervention (Group AB). The analysis of gain score across the two study phases also confirmed that, in each phase of the study, the group that received the constructive alignment intervention gained higher improvement in technical competence than did the non-constructive alignment group ($p < .05$).

Table 4.4 Results of Test on Technical Competence: Overall (Audit and Information Technology)

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	18.1	13.7			18.4	12.9			0.3	0.460	
Phase 1	56.6	15.4	*38.5*	*0.000*	35.8	17.7	*17.4*	*0.000*	20.8	0.000	*0.000*
Phase 2	60.2	26.7	*3.6*	*0.218*	51.3	26.4	*15.5*	*0.000*	8.9	0.059	*0.025*

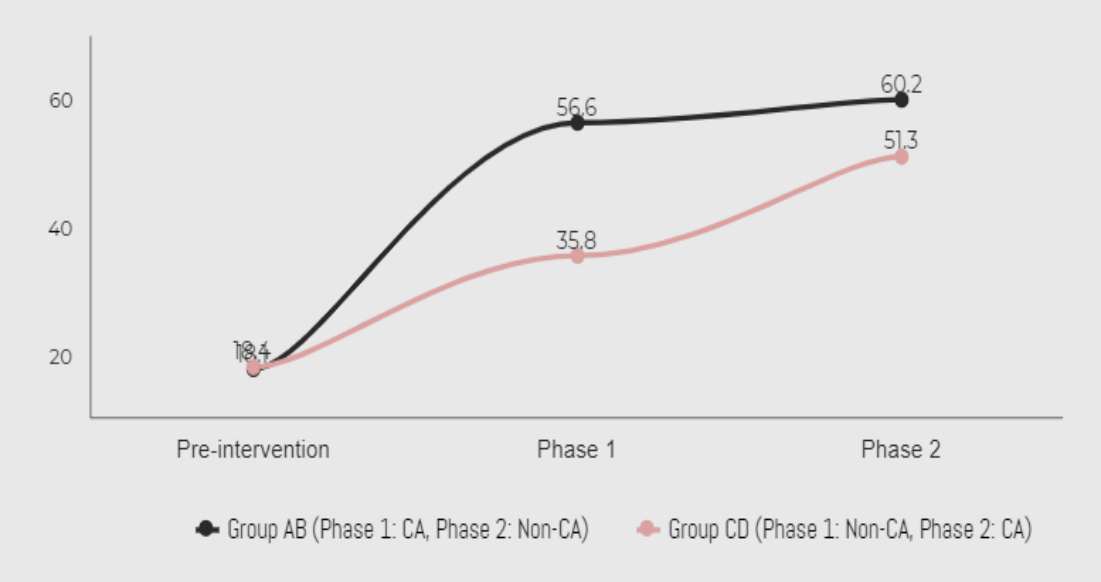

Figure 4.1 Results of Test on Technical Competence: Overall (Audit and Information Technology)

4.3.2 Results of Self-assessed Competence Questionnaire

The students were asked to self-assess their competence by responding to statements on the questionnaire using a four-point rating scale, ranging from 4 to 1. A rating of 4 indicated 'strongly agree' or 'very competent', 3 indicated 'agree' or 'competent', 2 indicated 'disagree' or 'incompetent', and 1 indicated 'strongly disagree' or 'very incompetent'. Unlike the auditing test, students were asked to respond to the questionnaire individually, so the data were analysed on an individual basis. The statistics descriptive of technical competence, including mean, standard deviation and percentage, are discussed below.

The technical competence of students in Group AB is presented in Table 4.5. Most students in Group AB (*n* = 89) reported that, prior to the experiment, they were not technically competent (audit and technology). Only 7% of students felt confident in their audit competence, and even fewer felt competent in technology (6%). A pattern seen from the questionnaire was that students felt more competent in theory than practice. For example, 54% of students expressed competence in response to the statement: 'I am able to describe the objectives and stages involved in performing an audit of financial statements'. However, only 6% indicated competence related to the statement: 'I am able to apply relevant auditing standards and applicable laws and regulations to an audit of financial statements'. The mean score of technical competence before the intervention was 2.2 out of 4 (*SD* = 0.2).

Table 4.5 Results of Questionnaire on Technical Competence: Group AB (*n* = 89)

Item	Pre-Intervention			Phase 1			Phase 2		
	Mean	SD	% Competent	Mean	SD	% Competent	Mean	SD	% Competent
Audit									
• Describe the objective and steps	2.5	0.5	54%	3.1	0.4	93%	3.1	0.5	89%
• Apply relevant audit standards	2.0	0.3	6%	2.9	0.6	75%	3.2	0.5	92%
Overall Audit	**2.2**	**0.3**	**7%**	**3.0**	**0.5**	**72%**	**3.1**	**0.5**	**88%**
Technology									
• Explain the role of IT	2.2	0.5	30%	2.9	0.6	71%	3.1	0.6	87%
• Use IT (e.g. Excel) in audit	1.9	0.5	11%	2.8	0.8	58%	3.3	0.5	98%
Overall Technology	**2.1**	**0.4**	**6%**	**2.8**	**0.6**	**48%**	**3.2**	**0.5**	**88%**
Technical Competence	**2.2**	**0.2**	**5%**	**2.9**	**0.4**	**66%**	**3.2**	**0.4**	**94%**

Data from the questionnaire collected upon completion of Phase 1 revealed that 72% of students in Group AB, who received the constructive alignment intervention, felt their auditing competence had improved. The percentage of students who felt competent in audits was higher than the percentage of students who felt competent in technology. Only 48% of students felt competent in technology, while 72% students felt competent in audits. The mean score of technical competence in Phase 1 was 2.9 (*SD* = 0.4). This score was higher than the mean score before the intervention. After the intervention in Phase 2, 88% of students indicated that they felt competent in both audits and technology. The mean for the overall technical competence was 3.2 (*SD* = 0.4).

Table 4.6 summarises the responses of students in Group CD. Similar to those in Group AB, most students in Group CD (n = 90) reported that they felt incompetent overall (audit and information technology) prior to the experiment. Only 12% of students in Group CD felt competent in audits. Fewer students (6%) indicated competence in conducting a particular task related to technology. The technical competence of students prior to the intervention received a mean score of 2.2 (SD = 0.3).

Table 4.6 Results of Questionnaire on Technical Competence: Group CD (n = 90)

Item	Pre-Intervention			Phase 1			Phase 2		
	Mean	SD	% Competent	Mean	SD	% Competent	Mean	SD	% Competent
Audit									
• Describe the objective and steps	2.4	0.4	40%	2.8	0.3	86%	2.9	0.4	83%
• Apply relevant audit standards	2.1	0.3	13%	2.5	0.5	50%	3.2	0.5	96%
Overall Audit	**2.2**	**0.3**	**12%**	**2.6**	**0.3**	**47%**	**3.0**	**0.4**	**83%**
Technology									
• Explain the role of IT	2.2	0.4	26%	2.8	0.4	82%	2.9	0.5	86%
• Use IT (e.g. Excel) in audit	2.1	0.5	18%	2.4	0.6	38%	3.2	0.5	96%
Overall Technology	**2.1**	**0.3**	**6%**	**2.6**	**0.4**	**34%**	**3.0**	**0.4**	**81%**
Technical Competence	**2.2**	**0.3**	**10%**	**2.6**	**0.3**	**49%**	**3.0**	**0.3**	**92%**

At the end of Phase 1, nearly half of the total students (47%) felt they were competent to handle an audit task, yet only 34% of students reported competence with technology. The mean score of technical competence in Phase 1 was 2.6 (SD = 0.3), which was higher than the mean score prior to the intervention. After students in Group CD received the constructive alignment intervention in Phase 2, more than 80% of students indicated perceived competence in audits (83%) and technology (81%). Students felt confident in their ability to deal with practical tasks, such as applying relevant auditing standards and using information technology in an audit of financial statements, with both application-oriented items receiving 96% positive responses. The overall technical competence in Phase 2 attained a mean score of 3.0 (SD = 0.3). Overall, students felt that their technical competence improved gradually, as indicated by the increased value of mean scores over the two phases of the study (see Figure 4.2).

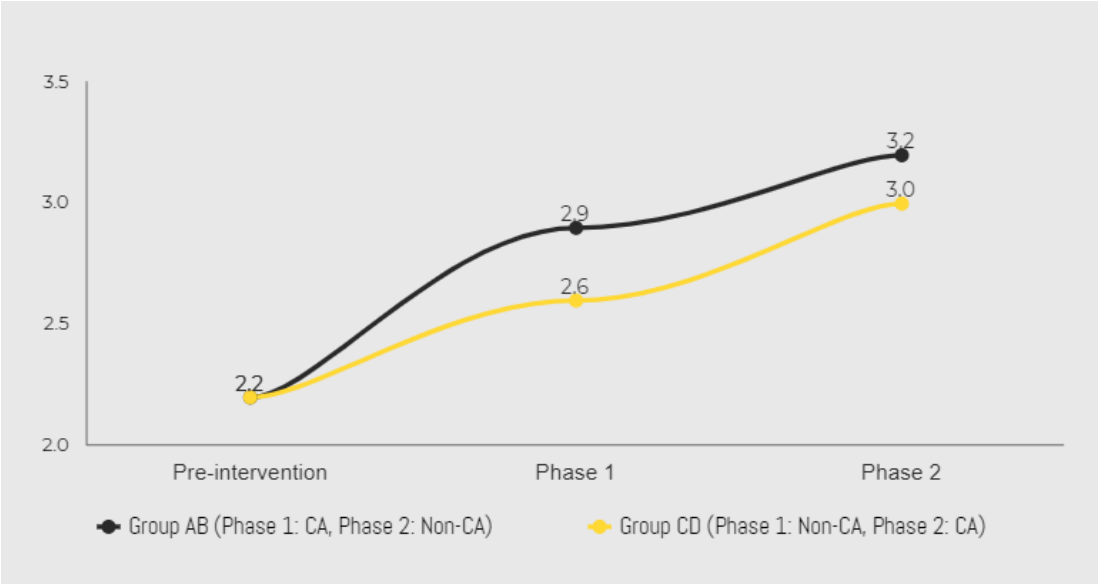

Figure 4.2 Results of Questionnaire on Technical Competence: Overall (Audit and Information Technology)

To statistically analyse the difference in perception between the groups on their level of competence, the Mann-Whitney U test was used. The results displayed in Table 4.7 indicate that, prior to the experiment, the differences between the groups were not significant in students' self-assessed level of technical competence (p = .372). The intervention in Phase 1 significantly changed students' perceptions across the groups (p < .05). The mean rank of Group AB, who received the constructive alignment intervention, was significantly higher (102.33) than that of Group CD, who did not receive the constructive alignment intervention (77.81), indicating that students in the constructive alignment intervention perceived greater technical competence. The statistics also revealed a significant difference between the groups in self-reported competence after the intervention in Phase 2 (p = .006). However, the calculation of mean rank showed that students in Group AB, who did not receive the constructive alignment intervention in Phase 2, still felt more technically competent than did Group CD, as indicated by the score of mean rank (99.43 versus 80.67).

Table 4.7 Difference in Technical Competence Based on Questionnaire

	Group	N	Mean Rank	Mann-Whitney U	*p*-value (one-tailed)
Pre-intervention	AB	89	88.78	3,896.000	0.372
	CD	90	91.21		
Phase 1	AB	89	102.33	2,908.000	0.000
	CD	90	77.81		
Phase 2	AB	89	99.43	3,165.500	0.006
	CD	90	80.67		
Gain scores 1 (from pre-intervention to Phase 1)	AB	89	102.17	2,921.500	0.001
	CD	90	77.96		
Gain scores 2 (from Phase 1 to Phase 2)	AB	89	80.97	4,808.500	0.008
	CD	90	98.93		

To understand the degree of improvement, an analysis of the gain scores was conducted. The analysis of gain scores revealed that the difference in gain scores between groups across the two study phases was significant ($p < .05$). The mean rank of the constructive alignment intervention group was higher than the non-constructive alignment intervention group (gain scores 1: 102.17 versus 77.96; gain scores 2: 98.93 versus 80.97). This indicated that, in each phase of the study, students who received the constructive alignment intervention felt they had a higher level of improvement in technical competence.

4.4 Quantitative Results: Non-technical Competence

This section presents the results related to the students' development of non-technical competence, which consisted of written communication, teamwork, professional scepticism and judgement, and ethics. In line with the measurement of technical competence, students' development of non-technical competence was assessed three times throughout the study. The first assessment was before the intervention (pre-test), the second assessment was after the completion of Phase 1 (post-test 1), and the third assessment was after the completion of Phase 2 (post-test 2). Data were collected through auditing tests and a self-assessed competence questionnaire.

In the auditing tests students were asked to: (1) write an audit memorandum, (2) apply professional scepticism and professional judgement and (3) identify and solve ethical issues when auditing financial statements. Students worked in teams for this test, but their ability to work in a team was not measured, as this was not a variable

considered in this enquiry. Instead, teamwork competence was measured through the self-assessed competence questionnaire. The analytical results describing students' non-technical competence are discussed below.

4.4.1 Results of Auditing Test

Table 4.8 displays the statistical results relating to non-technical competence in the area of written communication. Prior to the experiment, the mean score of written communication in Group AB was 32.5 and in Group CD was 30.9. No significant difference in mean scores was found between these groups (p = .211).

Table 4.8 Results of Test on Non-technical Competence: Written Communication

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	32.5	8.8			30.9	9.3			1.6	0.211	
Phase 1	73.2	11.1	*40.7*	*0.000*	46.2	12.9	*15.3*	*0.000*	27	0.000	*0.000*
Phase 2	45.5	13.2	*-27.7*	*0.000*	67.5	15.7	*21.3*	*0.000*	22	0.000	*0.000*

At the end of Phase 1, the mean scores of both groups had increased (Group AB: M = 73.2; Group CD: M = 46.2) and were significantly different between groups (p < .05), indicating that students completing the constructive alignment intervention performed better in written communication than did students in the non-constructive alignment intervention group. In Phase 2, when the intervention was reversed, students in Group AB decreased significantly on their mean score to 45.5 (MD = -27.7, p < .05), while students in Group CD increased significantly to 67.5 (MD = 21.3, p < .05). A statistically significant difference in mean scores was found between groups (p < .05). The gain scores analysis across the two study phases indicated that the improvement made by the group that received the constructive alignment intervention was significantly higher than that of the non-constructive alignment intervention group (p < .05).

Table 4.9 reflects the development of students' competence in the area of professional scepticism and professional judgement. The analysis found no significant difference in pre-intervention mean scores between Groups AB and CD (p = .399). In contrast, the results of the test in Phase 1 found a significant difference in mean scores between groups (p < .05). Group AB improved more (M = 35.5, MD = 29) on professional scepticism and judgement than did Group CD (M = 19.4, MD = 12.6). This significant improvement was confirmed by the p-value of the gain scores (p < .05). When Group AB did not receive the constructive alignment intervention in Phase 2, their mean score still increased significantly (M = 69.4, p < .05). The performance of Group CD in Phase 2 also increased significantly (M = 59.8, p < .05). In the respective period of the intervention, the improvement made by Group CD (MD = 40.4) was higher than that in Group AB (MD = 33.9).

Table 4.9 Results of Test on Non-technical Competence: Professional Scepticism and Judgement

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	6.5	6.8			6.8	5.6			0.3	0.399	
Phase 1	35.5	16.2	*29*	*0.000*	19.4	11.5	*12.6*	*0.000*	16.1	0.000	*0.000*
Phase 2	69.4	22.8	*33.9*	*0.000*	59.8	26.5	*40.4*	*0.000*	9.6	0.035	*0.206*

Table 4.10 shows the statistics for non-technical self-competence in the area of ethics. Prior to the experiment, the mean score of ethics in Group AB was 14.3 and in Group CD was 15. There was no significant difference in mean scores between these groups (p = .391). In each phase of the study, both groups increased their mean scores, but statistically significant differences of improvement between groups were not found (Phase 1: p = .808; Phase 2: p = .704).

Table 4.10 Results of Test on Non-technical Competence: Ethics

Condition	Group AB (Phase 1 CA → Phase 2 Non-CA) N = 44				Group CD (Phase 1 Non-CA → Phase 2 CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	14.3	13.7	*24.3*	*0.000*	15.0	8.8	*23.3*	*0.000*	0.7	0.391	*0.808*
Phase 1	38.6	23.9			38.3	25.4			0.3	0.474	
Phase 2	42.9	21.3	*4.3*	*0.189*	45.5	30.1	*7.2*	*0.127*	2.6	0.317	*0.704*

Table 4.11 shows the overall statistical results for non-technical competence. Before the intervention, students had a similar level of non-technical competence (Group AB: M = 17.8; Group CD: M = 17.6, p = .444). In Phase 1, Group AB scored higher (M = 53.8) than did Group CD (M = 39.8), and a statistically significant difference was found between the two groups ($p < .05$). When the intervention was reversed, Group AB declined significantly (MD = -4.7, p = .033) and Group CD increased significantly (MD = 15.8, $p < .05$). The analysis of the gain scores across the two phases revealed that the p-values were less than alpha. This indicated that the students in the constructive alignment intervention group developed a higher level of improvement on non-technical competence than did the students in the non-constructive alignment intervention group. Figure 4.3 displays the trend of students' development of non-technical competence.

Table 4.11 Results of Test on Non-technical Competence: Overall (Written Communication, Professional Scepticism and Judgement, and Ethics)

Condition	Group AB (CA → Non-CA) N = 44				Group CD (Non-CA → CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	17.8	6.7	*36*	*0.000*	17.6	5.1	*22.2*	*0.000*	0.2	0.444	*0.000*
Phase 1	53.8	13.4			39.8	10.8			14	0.000	
Phase 2	49.1	15.9	*-4.7*	*0.033*	55.6	21.1	*15.8*	*0.000*	6.5	0.052	*0.000*

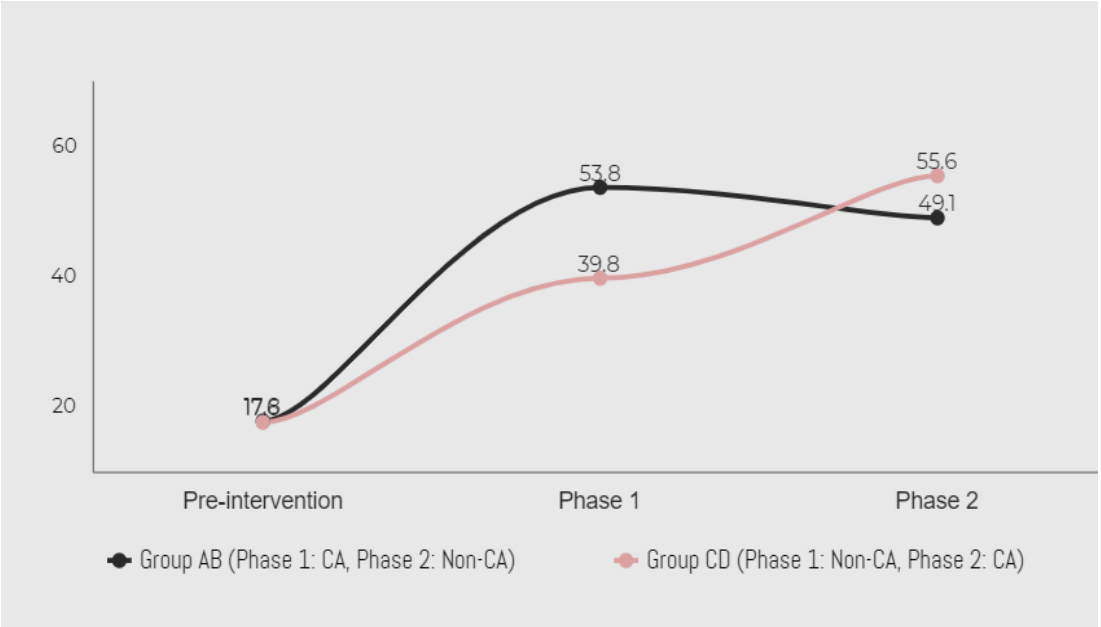

Figure 4.3 Results of Test on Non-technical Competence: Overall (Written Communication, Professional Scepticism and Judgement, and Ethics)

4.4.2 Results of Self-assessed Competence Questionnaire

The questionnaire included six statements related to non-technical competence, using a rating scale from 4 (strongly agree or very competent) to 1 (strongly disagree or very incompetent). The descriptive statistics, including means, standard deviations and percentages, are presented in Tables 4.12 and 4.13.

Table 4.12 reflects the responses of students in Group AB (n = 89) on their non-technical competence. Prior to the intervention, only 9% of students felt competent in communicating effectively in written form (M = 1.9). In contrast, 74% of students felt competent in teamwork (M = 2.8). In the area of professional scepticism and professional judgement, 23% of students felt they could apply professional scepticism (M = 2.1) and 35% of students thought they could apply professional judgement (M = 2.3). In the area of ethics, 44% of students felt they could identify ethical issues (M = 2.4) and 54% of students were confident that they could apply auditing standards and a code of ethics to resolve ethical dilemmas (M = 2.5). Overall, the mean score of non-technical competence prior to the intervention was 2.4, with 25% of students expressing their competence in dealing with non-technical tasks.

Table 4.12 Results of Questionnaire on Non-technical Competence: Group AB (*n* = 89)

Item	Pre-intervention			Phase 1			Phase 2		
	Mean	SD	% Competent	Mean	SD	% Competent	Mean	SD	% Competent
Written Communication									
• Effectively communicate in written form	**1.9**	**0.4**	**9%**	**2.8**	**0.5**	**76%**	**3.1**	**0.6**	**92%**
Teamwork									
• Display effective teamwork	**2.8**	**0.5**	**74%**	**3.2**	**0.4**	**98%**	**3.4**	**0.5**	**98%**
Professional scepticism and judgement									
• Apply professional scepticism	2.1	0.5	23%	2.8	0.7	69%	3.2	0.6	91%
• Apply professional judgement	2.3	0.5	35%	2.8	0.6	73%	3.1	0.4	97%
Overall	**2.2**	**0.5**	**17%**	**2.8**	**0.6**	**67%**	**3.1**	**0.4**	**91%**
Ethics									
• Identify ethical issues	2.4	0.6	44%	2.9	0.5	82%	3.1	0.5	94%
• Apply relevant standard on ethics	2.5	0.5	54%	2.9	0.6	81%	3.1	0.6	93%
Overall	**2.4**	**0.5**	**34%**	**2.9**	**0.5**	**76%**	**3.1**	**0.4**	**91%**
Non-Technical Competence	**2.4**	**0.3**	**25%**	**3.0**	**0.4**	**83%**	**3.2**	**0.4**	**97%**

Upon completion of the constructive alignment intervention in Phase 1, the students in Group AB felt they had improved in each area of non-technical competence. The overall mean was 3.0 and 83% students indicated competence in non-technical aspects. The highest mean was in the area of teamwork (*M* = 3.2), followed by ethics (*M* = 2.9), written communication (*M* = 2.8) and professional scepticism and judgement (*M* = 2.8). Interestingly, even after Phase 2, in which there was no intervention for Group AB, more students reported competence in non-technical competence (97%, *M* = 3.2). In summary, 92% of students felt they were competent in written communication (*M* = 3.1), 98% of students felt they were competent in teamwork (*M* = 3.4), 91% of students felt they could apply professional scepticism and judgement (*M* = 3.1) and 91% of students felt they could handle ethical issues (*M* = 3.1).

Table 4.13 displays the statistics of non-technical competence in Group CD. Similar to Group AB, students were not confident in their written communication ability prior to the intervention (*M* = 2.0). Other competence areas, such as professional

scepticism and judgement and ethics, received a mean score of 2.3. Teamwork was perceived as the area of competence in which most students felt confident. Seventy-seven per cent of students felt they could effectively work in a team (*M* = 2.8). In Phase 1, for the students in the non-constructive alignment intervention group, the highest mean score was also in the area of teamwork (*M* = 3.0), with 93% of students reporting confidence in being an effective team member. The same mean score (*M* = 2.6) was reported in the areas of professional scepticism and judgement, and ethics. The constructive alignment intervention in Phase 2 changed Group CD's perceptions. All students (100%) were confident in their written communication competence (*M* = 3.1). The other competence areas received more than 80% of positive responses, with 98% for teamwork (*M* = 3.3), 88% for professional scepticism and judgement (*M* = 3.1) and 95% for ethics (*M* = 3.1).

Table 4.13 Results of Questionnaire on Non-technical Competence: Group CD (*n* = 90)

Item	Pre-intervention			Phase 1			Phase 2		
	Mean	SD	% Competent	Mean	SD	% Competent	Mean	SD	% Competent
Written Communication									
• Effectively communicate in written form	**2.0**	**0.4**	**11%**	**2.4**	**0.5**	**43%**	**3.1**	**0.3**	**100%**
Teamwork									
• Display effective teamwork	**2.8**	**0.5**	**77%**	**3.0**	**0.4**	**93%**	**3.3**	**0.5**	**98%**
Professional scepticism and judgement									
• Apply professional scepticism	2.3	0.5	32%	2.4	0.5	39%	3.1	0.6	92%
• Apply professional judgement	2.3	0.5	34%	2.5	0.5	51%	3.1	0.5	92%
Overall	**2.3**	**0.5**	**26%**	**2.6**	**0.5**	**36%**	**3.1**	**0.5**	**88%**
Ethics									
• Identify ethical issues	2.3	0.5	34%	2.6	0.5	58%	3.0	0.5	95%
• Apply relevant standard to resolve ethical issues	2.4	0.5	51%	2.6	0.5	67%	3.1	0.3	99%
Overall	**2.3**	**0.5**	**24%**	**2.6**	**0.5**	**51%**	**3.1**	**0.3**	**95%**
Non-Technical Competence	**2.4**	**0.4**	**24%**	**2.6**	**0.4**	**54%**	**3.2**	**0.3**	**97%**

Overall, students felt that their non-technical competence improved gradually, as indicated by the increased value of mean scores over two phases of the study (see Figure 4.4).

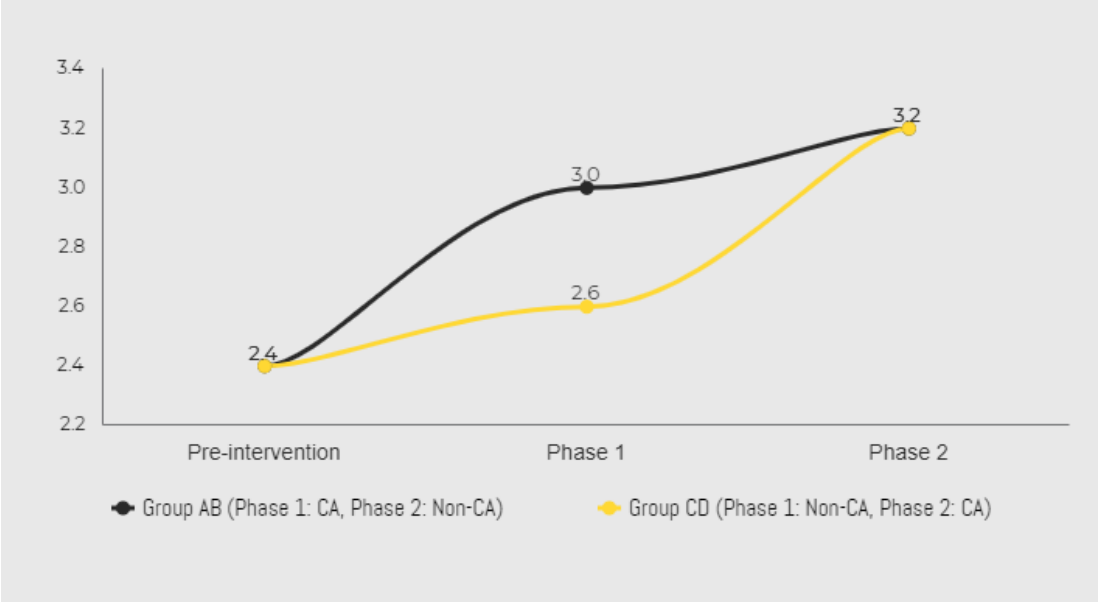

Figure 4.4 Results of Questionnaire on Non-technical Competence

To investigate the differences in students' perceptions between groups, the Mann-Whitney U test was applied. The results in Table 4.14 indicate that, prior to the experiment, no differences occurred in students' self-reported level of non-technical competence (p = .485). The intervention in Phase 1 significantly altered students' perceptions of their competence (p < .05). The mean rank of Group AB, who received the constructive alignment intervention, was much higher (110.48) than the group who did not receive the constructive alignment intervention (69.75), indicating that students undertaking the constructive alignment intervention felt more competent in non-technical aspects. However, after the interventions were reversed in Phase 2, students in both groups reported the same level of non-technical competence (p = .297).

An analysis of gain scores was performed to understand the difference in improvement level between groups. The results of the gain scores analysis revealed a significant difference in competence (p < .05) as perceived by students in both groups across two phases of study. The mean rank of the group that received the constructive alignment intervention was higher than that of the non-constructive alignment intervention group (gain scores 1: 105.88 versus 74.29; gain scores 2: 109.04 versus

70.74). This indicated that, in each phase of the study, students who received the constructive alignment intervention felt that they had a higher level of improvement in non-technical competence than did students in the non-constructive alignment intervention group.

Table 4.14 Difference in Non-technical Competence Based on Questionnaire

	Group	N	Mean Rank	Mann-Whitney U	*p*-value (one-tailed)
Pre-intervention	AB	89	90.14	3,992.500	0.485
	CD	90	89.86		
Phase 1	AB	89	110.48	2,182.500	0.000
	CD	90	69.75		
Phase 2	AB	89	92.00	3,827.000	0.297
	CD	90	88.02		
Gain scores 1 (from pre-intervention to Phase 1)	AB	89	105.88	2,591.500	0.000
	CD	90	74.29		
Gain scores 2 (from Phase 1 to Phase 2)	AB	89	70.74	2,291.000	0.000
	CD	90	109.04		

4.5 Quantitative Results: Technical and Non-technical Competence

This section provides a compilation of quantitative results of the development of technical and non-technical competence.

4.5.1 Results of the auditing test

Table 4.15 presents the statistical results of the auditing test on the development of technical and non-technical competence. Before the intervention, Groups AB and CD had the same level of integrated competence ($p = 0.487$). They began with a low level of technical and non-technical competence, with the mean scores of both groups at 17.9, with slightly different standard deviations (Group AB $SD = 8.2$; Group CD $SD = 7.6$).

After the intervention in Phases 1 and 2, the group that received the constructive alignment intervention (Phase 1: Group AB; Phase 2: Group CD) developed significantly higher improvement in technical and non-technical competence than did the non-constructive alignment group (Phase 1: Group CD; Phase 2: Group AB), as indicated by the *p*-value of gain scores in both phases ($p < .05$). In addition, students who experienced the discontinuation of the constructive alignment

intervention in Phase 2 (Group AB) were unable to further develop their competence, as indicated by the slight decrease in mean scores (*MD* = -0.5). Figure 4.5 illustrates the development of integrated competence for both groups during the experimental study.

Table 4.15 Results of Test on Technical and Non-technical Competence

Condition	Group AB (CA → Non-CA) N = 44				Group CD (Non-CA → CA) N = 44				Between groups		
	M	SD	Means Difference (MD)	p-value (one-tailed)	M	SD	Means Difference (MD)	p-value (one-tailed)	Means Difference (MD)	p-value (one-tailed)	p-value gain scores
Pre Intervention	17.9	8.2			17.9	7.6			0	0.487	
Phase 1	55.2	11.8	*37.3*	*0.000*	37.8	11.9	*19.9*	*0.000*	17.4	0.000	*0.000*
Phase 2	54.7	18.3	*-0.5*	*0.425*	53.4	21.6	*15.6*	*0.000*	1.3	0.389	*0.000*

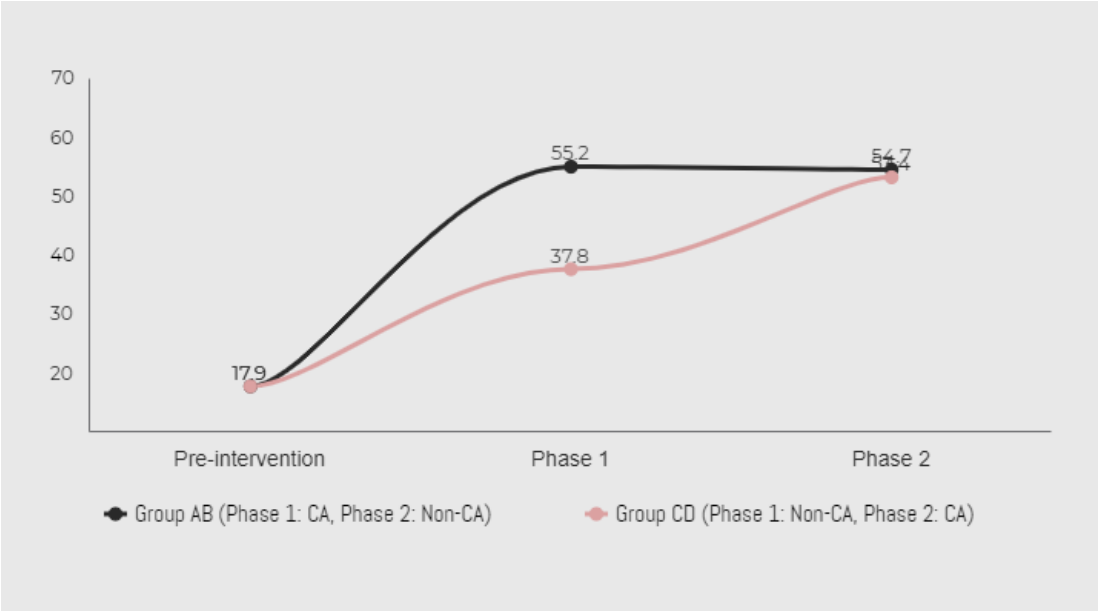

Figure 4.5 Results of Test on Technical and Non-technical Competence

4.5.2 Results of Self-assessed Competence Questionnaire

Table 4.16 displays the results from the questionnaire regarding the development of technical and non-technical competence. Prior to the experiment, only 10% of students in Group AB and 23% of students in Group CD felt competent. At the end of Phase 1, there was a sharp increase in the number of students in both groups

who reported competence in technical and non-technical aspects (Group AB: 84%; Group CD: 61%). At the end of Phase 2, 98% of students in both groups felt competent in undertaking an audit of financial statements. Overall, students felt that their technical and non-technical competence improved gradually, as indicated by the increased value of mean scores over two phases of the study (see Figure 4.6).

Table 4.16 Results of Questionnaire on Technical and Non-technical Competence

Item	Pre-Intervention			Phase 1			Phase 2		
	Mean	SD	% Competent	Mean	SD	% Competent	Mean	SD	% Competent
Group AB (n=89)									
Technical Competence	2.2	0.2	5%	2.9	0.4	66%	3.2	0.4	94%
Non-Technical Competence	2.4	0.3	25%	3.0	0.4	83%	3.2	0.4	97%
Overall	**2.3**	**0.2**	**10%**	**2.9**	**0.4**	**84%**	**3.2**	**0.4**	**98%**
Group CD (n=90)									
Technical Competence	2.2	0.3	10%	2.6	0.3	49%	3.0	0.3	92%
Non-Technical Competence	2.4	0.4	24%	2.6	0.4	54%	3.2	0.3	97%
Overall	**2.3**	**0.3**	**23%**	**2.6**	**0.3**	**61%**	**3.1**	**0.3**	**98%**

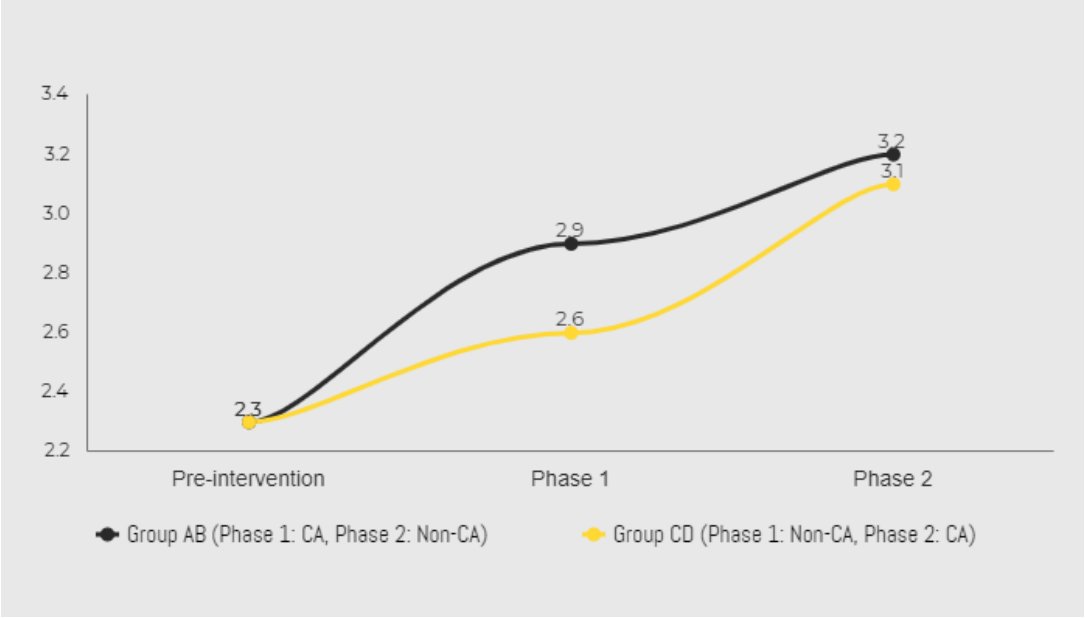

Figure 4.6 Results of Questionnaire on Technical and Non-technical Competence

Table 4.17 presents the differences in the development of technical and non-technical competence as perceived by students. Prior to the experiment, no difference was evident in students' self-assessed level of technical and non-technical competence (p = 0.393). At the end of Phase 1, students in the constructive alignment intervention

group felt more competent in both aspects ($p < .05$). After the interventions were reversed in Phase 2, students in the constructive alignment and non-constructive alignment intervention groups reported the same level of technical and non-technical competence ($p = 0.051$). To examine the difference in improvement level between groups, the gain scores analysis was computed and revealed that the constructive alignment intervention groups (Phase 1: Group AB; Phase 2: Group CD) felt that they had a higher level of improvement in technical and non-technical competence, as indicated by the *p*-value of gain scores 1 and 2 ($p < .05$).

Table 4.17 Difference in Technical and Non-technical Competence Based on Questionnaire

	Group	N	Mean Rank	Mann-Whitney U	*p*-value (one-tailed)
Pre-intervention	AB	89	91.05	3,911.500	0.393
	CD	90	88.96		
Phase 1	AB	89	107.85	2,416.000	0.000
	CD	90	72.34		
Phase 2	AB	89	96.31	3,443.000	0.051
	CD	90	83.76		
Gain scores 1 (from pre-intervention to Phase 1)	AB	89	106.35	2,549.500	0.000
	CD	90	73.83		
Gain scores 2 (from Phase 1 to Phase 2)	AB	89	73.11	2,502.000	0.000
	CD	90	106.71		

4.6 Qualitative Results: Students' Perceptions

This section provides the results of the group interviews that followed the experiments. Twenty students participated in three group interviews. The participants were purposefully sampled based on the quantitative data evidence. As explained in the previous section (Section 4.5), the quantitative data confirmed that the constructive alignment intervention facilitated the development of students' technical and non-technical competence; therefore, the first and second group interviews focused on students who experienced the constructive alignment intervention. The quantitative data also confirmed that those who experienced the discontinuation of the constructive alignment intervention in Phase 2 were unable to further develop their competence, so the third group interview involved students in this category. Each group interview included a subset of students whose level of improvement was above and below the average improvement of the group.

As presented in Table 4.18, the first group interview (coded GI-1) was conducted after Phase 1, involving eight participants from the constructive alignment intervention group (Group AB). Participants' names were coded GI-1a to GI-1h. The second group interview (coded GI-2) was conducted after Phase 2. Six participants from the constructive alignment group in Phase 2 (Group CD) participated in this interview, coded GI-2a to GI-2f. The final group interview (coded GI-3) was also conducted after Phase 2, but involved students who experienced discontinuation of the constructive alignment intervention in Phase 2 (Group AB). Six participants, coded GI-3a to GI-3f, were involved in this third group interview.

Table 4.18 Group Interview Participants

Interview	Stage	Group	Participants
GI-1	After Phase 1	AB (constructive alignment group)	Eight participants: GI-1a, GI-1b, GI-1c, GI-1d, GI-1e, GI-1f, GI-1g, GI-1h
GI-2	After Phase 2	CD (constructive alignment group)	Six participants: GI-2a, GI-2b, GI-2c, GI-2d, GI-2e, GI-2f
GI-3	After Phase 2	AB (non-constructive alignment group)	Six participants: GI-3a, GI-3b, GI-3c, GI-3d, GI-3e, GI-3f

Several themes were developed from the analysis of the group interview data: 'I see the alignment', 'I am motivated to learn', 'I engage in deep learning, 'I am on my way' and 'barriers'. The group interview data were originally clustered according to the improvement level of learning outcomes made by students, some who were above and some who were below the average improvement of the group. However, students' comments were similar regardless of their level of improvement. For this reason, the results presented here are aggregated, rather than organised by clustered improvement of learning outcomes. The themes are discussed in the following sections: 'I see the alignment', 'I am motivated to learn', 'I engage in deep learning', 'I am on my way' and 'barriers'.

4.6.1 'I See the Alignment'

The first theme that emerged in the group interviews was 'I see the alignment'. This theme described students' ability to identify a connection between the course learning outcomes, learning activities and assessment. All students who experienced the constructive alignment intervention indicated that they had a clear understanding of the intended learning outcomes of the Auditing 2 course and could clearly describe the course learning outcomes. According to them, the main goal upon completion of

the course was to be able to audit financial statements: 'I know that the expectation is to enable us to audit financial statements' (GI-1a).

Students also recognised that, apart from the major goal of being able to apply audit procedures, they were also expected to develop competencies pertaining to the auditing profession, such as competence in technology, communication, teamwork, professional scepticism and judgement, and ethics:

> I understand that, at the end of the course, I have to be able to audit financial statements, apply technology in audit, make a written audit documentation, work effectively in teams, [be] sensitive to detect any misstatement and adhere to ethical conduct. (GI-1d)
>
> In this course, students are expected to audit financial statements based on audit standard and make a well-written memorandum. Apart from that, students have to understand ethics and utilise technology to make auditing job easier. (GI-2b)

The students indicated that there was a strong alignment in the course design. They saw the link between the learning activities and assessment tasks to support the intended learning outcomes. They described the main learning activities and that assessment was related to problem solving using auditing cases. The auditing cases, in their opinion, were matched to the intended learning outcomes. The students understood the alignment between the intended learning outcomes, teaching-learning activities and assessment, as indicated by the following statements:

> The intended competence, such as audit, writing, teamwork, scepticism and ethics, were applied in the auditing cases that we learnt every week. So, the learning activities and assessment support the development of the competence. (GI-1c)
>
> I think all the intended competence have been represented in the auditing cases. So, in each auditing case, we have to work on each competence. (GI-2e)

One student (GI-1a) added that because 'the expectation and implementation in each week were aligned and continued', she could focus on her learning and be confident in achieving the intended learning outcomes. Another student (GI-1g) described that, when he studied in the constructive alignment intervention group, he realised that auditing is not only about quantitative analyses and numbers—qualitative

aspects, such as applying good judgement, are also important. This indicated that the alignment system had been implemented successfully.

Further, the students noticed that there was no alignment when they studied under the non-constructive alignment intervention. In the non-constructive alignment intervention group, the weekly learning activities focused on the mastery of audit theory. Students did not engage in activities that supported the attainment of other competencies, such as written communication. As one student stated: 'in the first half of the semester [in the constructive alignment group], I learnt how to write an effective audit memorandum, but in the second half of the semester [in the non-constructive alignment group], I did not write' (GI-3a). Unsurprisingly, students commented that, when they studied in the non-constructive alignment intervention group, they experienced difficulties in completing the auditing test that required them to demonstrate technical and non-technical competence.

However, the strong link between learning activities, assessment and intended learning outcomes experienced by students in the constructive alignment intervention group was not free from critique. The students indicated that one competence area in the course – information technology – did not meet their expectation. Most students in the constructive alignment intervention group commented that there was an expectation mismatch in the type of technology chosen for the course. The learning outcomes expected students to use Microsoft Excel to audit financial statements, but the use of spreadsheet software was below students' expectations:

> My expectation in technology is … something about software or operating software in auditing. Well, [in this course] I only learnt Excel, which is always used in any other courses. So, what is the difference? That is certainly below my expectation. (GI-1g)

> Yeah, the same with him, I thought, why only Excel? Well, there must be many applications or software in auditing, right? So, it keeps ringing in my head, how is the application of technology in auditing? Honestly, I am not so confident using Excel in auditing. No, it is not my expectation. (GI-1f)

Students used the phrases 'only Excel', 'not so confident' and 'below my expectation' when describing Microsoft Excel. Such expressions represented dissatisfaction with only using Microsoft Excel in the course. For students, Excel is a

common software used for many purposes, and this type of general software was not expected to be employed by the students in the Auditing 2 course. They expected the course to cover technology specific to auditing purposes. The students commented that, in their accounting and statistics courses, they had learnt using accounting packages, such as MYOB, and statistics software, such as SPSS. Therefore, they assumed that software specifically designed for auditing must be available as well:

> In the accounting course, we learnt MYOB, so, in auditing, there must be a specialised software as well. But we were not introduced to it. We were given Excel only. Well, Excel is a common software, right? Can be used for anything. (GI-1h)
>
> True … just like using statistical software in statistics, we want to use audit software in auditing course. (GI-1d)

Overall, despite the common agreement among students in the constructive alignment group that there was alignment in the course design, the students also felt there were problems concerning different expectations regarding the type of tools used to support the development of technological competence. Nevertheless, the students indicated that, under the constructive alignment intervention, they were motivated to learn auditing. This will be described in the following section.

4.6.2 'I Am Motivated to Learn'

The second theme developed from the analysis of the group interview data was 'I am motivated to learn'. This theme described how students under the constructive alignment intervention were motivated to learn auditing. Generally, the factors that encouraged students to learn fell into two categories: the three main components of the alignment system (the intended learning outcomes, learning activities and assessment) and the feedback.

All students found that learning auditing in a constructively aligned system was different from that in a non-constructively aligned system. Numerous terms were used by students to describe their impression of learning under the constructive alignment intervention: 'surprising' (GI-1f, GI-1h), 'challenging' (GI-2b), 'interesting' (GI-1c) and 'exciting' (GI-2f). These terms indicated a positive view of the new learning

system experienced. Although some students reported some negativity at the beginning of the course, they enjoyed their study once they were aware of the benefits:

> It's really surprising to know that the approach to learn auditing in this course [Auditing 2] is different to the previous course [Auditing 1]. We used to do presentation and lecturing. That's all. I was not sure what I learnt at the time. In this course [Auditing 2], we have to deal with auditing cases, discuss, write and make arguments. At the beginning, I felt like, why did we get a different way to learn auditing? Other classrooms [the non-constructive alignment intervention group] did not do this. I know other classrooms did presentations, just as usual. They were so relaxed. Well … it's unfair. I was jealous. That's my first thought. But then I started to get my motivation to learn. I keep doing on my learning routine, and I enjoy it. (GI-1f)

A factor that motivated students to learn was the authentic learning outcomes that were clearly explained to them. One student (GI-2a) stated that once she knew the learning outcomes of the course, she felt that 'this is something that can be applied in the workplace, I was actually educated to become an auditor'. Another student (GI-2f) explained that the motivation to learn auditing occurred when the instructor told him the learning outcomes of the Auditing 2 course and how they related to the prospect of becoming an auditor. This student viewed the audit sector as a promising future career path, so he invested his best effort to achieve expertise in auditing. Apparently, he acquired a sense of purpose in learning auditing:

> At first, I thought I want to be an internal accountant. Then I was told [by the instructor] about industry revolution 4.0 that affects accounting, auditing, taxation. I think, well, accounting software such as MYOB, Zahir accounting, could replace me [as an internal accountant]. In auditing, auditors have to apply professional judgement, scepticism, so computers could not fully replace the auditor's job. Auditing is the discipline that would stay on top compared with other accounting disciplines. I love auditing now. (GI-2f)

However, most students who participated in the group interviews did not see the authentic intended learning outcomes as the main determinant of their motivation

to learn auditing. They mentioned that authentic (real-life) learning activities and assessment tasks provided the greatest motivation:

> I am so motivated to learn auditing in this course because we have to deal with real auditing cases. I am very happy to learn not only about audit theory, but also practice. Really interesting. (GI-1c)
>
> For me, Auditing 2 is so challenging because we deal with real audit practice. Very difficult indeed because this is something new in terms of the method and the content, but that even makes me interested to learn in depth. (GI-2b)

Notably, in this extract, the students stated that they found learning through real audit practice preferable to learning the theory of auditing. Several students explained why the authentic aspects of learning auditing were important to them. One student (GI-1e) commented that he had to deal with various activities, such as applying audit procedures and developing audit documentation, which were confusing at the beginning, but he then realised that 'this kind of activities really sticks in my head. I feel like I got it, I know it' (GI-1e). Similarly, another student (GI-3c) stated that working on authentic audit cases 'enables me to remember more and forget less'.

Another reason for the preference of authentic practice over theory was reported by student GI-2a. This student commented that she enjoyed learning activities in the course that focused on real audit practice because she experienced the 'aha!' feeling that this is the work that real auditors undertake. Another student (GI-1g) also felt that he could now see clearly how audits operate in the workplace. He relayed his personal feeling:

> I thought audit was just like black and white picture. I had a science background in my high school, so auditing seemed like just checking numbers. But when I studied in the Auditing 2 course, oh … so this is a real audit, so this is how the auditor works, this is a real practice of auditing. We practised auditing a financial statement from the auditing cases provided. Very interesting. You know, for someone who had a science background like me, knowing that the real audit practice is challenging makes me so excited to learn. I feel like I am a detective. Really like these activities, searching for something hidden. Very curious. I need something 'challenging' to boost motivation. And the cases provided in this course do improve my motivation to learn. (GI-1)

Overall, the students indicated that the three interrelated components in the alignment system—the authenticity of the intended learning outcomes, authentic learning activities and authentic assessment tasks—increased their desire to learn. The students saw that the focus on authentic application, rather than theory, was motivating and directly connected to the intended learning outcomes. Hence, they were able to navigate their learning to achieve the learning outcomes. While the alignment system enabled student motivation, students also reported that feedback enhanced their motivation to learn.

Students portrayed feedback as an essential aspect in motivating their learning. Many students in the constructive alignment intervention group spoke about how they were impressed by the authentic feedback given in the course: 'The feedback was very good. The feedback was not only related to theory in textbooks, but it was always connected to real-life phenomena' (GI-2d). One student (GI-1a) felt that, although sometimes they received poor marks in an assignment, they were happy because they knew exactly how to improve. The feeling of happiness in being aware of their mistakes was confirmed by other students (GI-1g and GI-1f), who thought that the mistakes represented the areas of students' deficiencies, so they were important to know to develop competencies. When they had to work on another assignment, they remembered the mistakes and feedback from the previous ones. They learnt from the mistakes and eventually did not repeat them.

Most students found the feedback not only helpful in locating their mistakes, but also in providing suggestions on how to improve on the next assignment:

> The feedback gave me direction to learn … how to develop scepticism, how to reconfirm audit evidence in more detail, how to confirm management assertions with the audit evidence, how to write down the audit findings in a memo, how to apply ethics. (GI-1c)

> Feedback helped me to learn how to do vouching, find errors and learn audit standards. (GI-2b)

One student (GI-1h), who clearly remembered the written feedback she had received in her assignment, said that the feedback encouraged her to do better work for the next assignments. She believed she had become a cautious student who thought

deeply and carefully before submitting an assignment. Her view aligned with others. For instance, one student (GI-2a) stated that she read and re-read an audit program carefully before starting examining the audit evidence. Another student (GI-1f) also stated that she began investing significant effort into the course to seek knowledge. She became more critical in evaluating information: 'so I was like … here in the book, it says like this, while on the internet, it says like that. Why different? … which one is better, what is the alternative option?' (GI-1f).

As each of these extracts suggests, the alignment system was strengthened by the feedback provided. Feedback is an implicit element in constructive alignment that encourages students' desire to learn. Unless authentic feedback was provided, the students did not see the urgency to learn auditing (GI-3d).

4.6.3 'I Engage in Deep Learning'

The third theme developed from the interview data was 'I engage in deep learning'. This theme describes the learning approach that students used to develop their competence. This theme was repeatedly identified by students who often asserted that, under the constructive alignment intervention, they undertook 'actual learning'. The students framed their learning approach by contrasting two learning conditions in the Auditing 2 course: the constructive alignment intervention versus the non-constructive alignment intervention.

Students described that the main teaching and learning activities in the non-constructive alignment intervention group were similar to those in the previous auditing course, which included lecturing and student presentations and focused on content knowledge. Students described their learning in the non-constructive alignment intervention group as follows:

> Well … it's only presentation, get prepared for the presentation. That's all. Read a book for the presentation and just say whatever the book says or listen to other student presentations. (GI-2f)

> I can't get a picture of what the auditor job looks like. When the learning strategy is student presentation, the only one who learns is the one who presenting. Other students did not really care. (GI-2e)

Responding to those comments, another student further explained that, as she worked in a group for a presentation, she only focused on a subset of the group task:

> We were divided into several groups. Then each group picked a topic, presented the topic in front the class. In each group, we divided the role—I present on A, while you present on B, and she is on C. So, I only learnt my own part. That's the strategy. The only part that I learnt was my own part of presentation. It's not even one chapter, it's on my own part that I presented. (GI-2d)

When students were asked their feelings about studying in the non-constructive alignment intervention group, they stated:

> I tend to be sleepy, sometimes fall asleep. I forgot the materials very easily because I only listened to lecturers and did one presentation. (GI-3f)
>
> That was so boring. It's not real, it's not applied to the real-world auditing. I don't even need to look at the SPAP [auditing standard]. Well, we have sort of theory in mind, but, when it comes to the practice, such as finding misstatements, we can't. (GI-2f)
>
> When I listened to my friends' presentation, I was more confused because they just read the textbook. (GI-2d)

The students' comments above indicated that the learning activities in the non-constructive alignment intervention group were not interesting and did not encourage students to learn. Although presentation is a student-centred activity, the students felt they had minimal engagement with the learning activities. Their learning was meaningless and did not stimulate understanding.

In contrast, when the students studied in the constructive alignment intervention environment, they were aware of the need for deep learning. The students stated that, to study in the constructive alignment intervention group, memorising was insufficient to achieve competence. They had to explore the answers by themselves, and understand and apply the connections between their theoretical understandings and real-world practice. The students believed they needed a system that 'forced' them to learn to engage in deep learning:

> In Auditing 2 course, we were indirectly forced to learn through case studies, so we have to learn, such as reading auditing textbook

> intensively, learn how to work with Excel, learn how to communicate audit findings through presentation and audit memo. We also learn ethics. When we did the auditing cases, we reviewed the theories first. Is the theory fit to the audit case we are working with? So, it's like, we studied again and again, indirectly, I felt like … I just understand many things. I am so happy that I have the opportunity to reveal knowledge by myself. (GI-1f)

This extract suggested that the student was trapped in a system that 'forced' her to learn in the constructive alignment intervention environment. She combined theory and practice to work on auditing cases and, as a result, was able to construct her own knowledge. Another student had a similar experience:

> Well, at first, I thought, why do we suddenly get an auditing case? What is the theory behind it? Don't we need to learn the theory first, and then continue to apply the theory in the case? But as the time flies, I understand that, while doing the auditing case, I learn theory and practice at the same time. (GI-1g)

The auditing cases provided in the constructive alignment intervention group stimulated students to seek information from different sources. The information was not provided—the students had to locate it themselves. The need to use multiple resources in the learning process is highlighted in the following extract:

> To understand the auditing cases, we have to learn SPAP [auditing standard] first, so having SPAP is compulsory. Yeah, it's very thick and big *[laugh]*. To deal with ethical issue, we have to make arguments based on code of ethics. So, we downloaded and read the code of ethics. So, when the cases asked us to do something, we look at the rule in SPAP and code of ethics. (GI-2e)

In addition, all interviewees reported that, during their learning process, they appreciated the support that teamwork provided. In the Auditing 2 course, auditing cases were designed to be completed in a team so that students learnt how to work as effective audit team members. One participant commented: 'We do study hard as a team. We even have like a base camp dedicated to study audit, to work on auditing cases. For us, that was impressive effort to study. Never did that before' (GI-1g).

The benefits of working as a team were mentioned by many students. They were able to 'exchange ideas and come up with the appropriate solutions' (GI-3c), 'complete the tasks easier' (GI-3b) and 'support and complement each other' (GI-1b). The benefits of supporting and complementing each other are indicated in the following extracts:

> I just realised that my partner is not quite confident in communication, but he is so detailed. I am certainly in the opposite direction. I am not a detailed person. You know, to be an auditor, you need to be very detailed. So, I learnt from my partner, and he learnt from me about the communication thing. (GI-1b)
>
> In my team, we have sort of specialisations. I am more technical and my partner tends to be good at non-technical. (GI-3d)
>
> My partner is very good at thinking, decision making, while I am a worker type of person. So, he took a role to find a solution and I did the work. I also gave suggestions if her solution may be inappropriate. That's what we did at the beginning. But then I am able to find solutions for the next tasks. (GI-3b)

These extracts suggested that the students enjoyed working together. They recognised each other's strengths and weaknesses, and learnt from each other to mitigate weakness. They collaborated to meet common goals in developing their competencies. Through engaging in deep learning that was supported by working together as a team, students commented that their learning enhanced their competence development.

4.6.4 'I Am On My Way'

'I am on my way' was the theme describing students' feeling of improvement after studying in the constructive alignment intervention. Students felt they had developed competencies, but were also in the middle of their journey to developing adequate competence. The following are examples of students' comments to illustrate how they gained confidence after studying in the constructive alignment intervention group:

> I felt more satisfied after completing auditing cases [constructive alignment intervention group] compared with after finishing

> presentation [non-constructive alignment intervention group]. (GI-2f)
>
> We are very confident. Next semester, we are going to do internship. I am sure I am going to choose public accounting firms [auditing sector] for internship. (GI-2d)

The students felt they had developed both technical and non-technical competencies:

> Both competencies [technical and non-technical] developed well. In the beginning, we did not know how to carry out audit procedures, now we know. We can use Excel in auditing too. Cooperation among team members is also good, ethics and communication developed as well. (GI-3b)
>
> Rather than looking at every single number, I am now able to use Excel formula. (GI-3d)
>
> My writing is more organised, I know how to express ideas in formal structure. I did not know about this before; I wrote just the way I want to write. Now I know that to write a professional audit documentation, I should begin by introductory paragraph, such as 'this audit memo discuss the findings of our audit, bla, bla, bla'. (GI-1f)

The students indicated that the development of their non-technical competence to some extent was associated with technical competence. The students felt that teamwork and ethics were types of non-technical competence that were easy to deal with, while certain areas of non-technical competence – such as written communication and professional scepticism and judgement – were challenging and depended on their abilities in technical competence:

> I think technical competence is the foundation for developing non-technical competence. When we are not good in audit, we can't develop our thought for non-technical ones, such as judgement or written communication. (GI-3c)
>
> Technical competence is like doing something that is patterned—there are steps and procedures that must be followed—while non-technical, such as professional judgement, needs further reasoning and thinking. Writing audit documentation is also challenging. Yeah, we know the structure to write good audit memo, but I still

> need to think deeply to communicate audit findings into written form. (GI-3f)

The students recognised that they still had a long way to go in their development of competence. They stated:

> I started at 0%. Now [after receiving the constructive alignment intervention] at least I could reach like 40%, with strengths in auditing, communication and teamwork. (GI-1h)

> [Before receiving constructive alignment intervention], my competence was like from 0%, literally 0%. I said this because I knew audit theories, but I did not know how the theories work in practice. No idea at all. So, for me, my prior understanding about auditing was 0%. And now [after receiving the constructive alignment intervention], I think I have reached 45%. At this point, at least my eyes have opened—'so this is the real auditor job'. But to comprehend all the auditing standards, I am not reaching that point. There are so many things that I have to learn. (GI-1g)

4.6.5 Barriers

The data indicated that the students experienced barriers when they studied in a constructively aligned system that limited their potential to develop competencies at a high level – notably, 'lack of continuity', 'language' and 'insufficient guidance'.

4.6.5.1 Lack of Continuity

The students argued that, to best develop their competence, they needed some continuity in the learning process, both within each course and between courses. They needed a longer period of constructive alignment intervention to fully develop their competence:

> I know the expectation is to be able to audit financial statements. We have learnt how to get the sample, how to deal with misstatement, but learning auditing cannot be that easy. We cannot learn auditing in a short period of time. That's impossible. We need practice and practice in various audit situations. So, to get the maximum result, I really need more practice, not just for a short time. (GI-1a)

Particular attention was given to students' comments in Group AB, who ceased receiving the constructive alignment intervention in Phase 2. When they continued their study without the intervention, the students explained their feelings:

> I felt more relaxed, but this made me neglectful on my own learning. (GI-3e)
>
> Mixed feeling, between happy and sad. Happy because the class somehow became more relaxed, sad because we have to leave auditing practice and we were back to remembering theory. I did not study as hard as before because … well, just like any other courses, we read a book only for the purpose of presentation. (GI-3d)
>
> I felt comfortable to do things that I normally did [lectures and presentations]. But soon, I felt there was no more progress. I was curious about the earlier approach [constructive alignment intervention]. I realised that if I want to make a substantial progress, I have to get out of my comfort zone. (GI-3f)

These extracts reflected the students' feelings about the discontinuation of the constructive alignment intervention. A sense of 'freedom' occurred at the beginning, yet then students felt they were no longer improving in their learning because of the altered learning approach. Students agreed that they needed a consistent system to continue learning effectively. When these students were asked why their non-technical competence, such as written communication, decreased significantly after the constructive alignment intervention was discontinued, they explained:

> In the first half semester [under the constructive alignment intervention], I prepared well, I learnt how to do the right audit procedures, I finished the audit procedure faster and had time to work on audit memo. Then in the second half semester [under the non-constructive alignment intervention], I rarely learn. In the post-test 2, we have to deal with different accounts to audit, and so it took a longer time to finish the audit procedure. (G3-3a)
>
> We focused more on audit work paper and Excel [technical competence]. When the time was almost over, we just started working on audit documentation and the critical thinking part. (G3-3b)
>
> I did not forget how to write audit memo; I just need more time to finish the 'audit part'. We rushed to write … very close to the end of the test. (G3-3f)

The comments indicated that students' declined performance in non-technical competence, particularly in written communication, was due to their declining performance in audit competence. They spent a long time completing the audit section and did not have time to devote much attention to non-technical competence. This finding indicated that technical competence is the basis for developing non-technical competence, such as written communication, as one student (GI-3d) said: 'my auditing competence in this topic was still lacking, so I cannot develop my thinking for the non-technical one'.

The students stated that an effective learning system was not only important to implement in a single course, but should be implemented in other courses to help ensure their continuity of effective learning:

> I think we are still in the transition … adapt to new learning system in Auditing 2. We were so surprised. I know this is so good, but what if this idea goes up to the faculty level, so the intended learning outcomes on this and that competence can be set to other courses? Like, if Auditing 1 course used this system, learning in Auditing 2 course would be so much easier because we can continue what we do in Auditing 1 course. (GI-1a)

> What if the previous auditing course [Auditing 1 course] used the real-life practice, case-based learning strategy, so that it would make us easier to understand the auditing from the beginning? (GI-2e)

> I felt there was no connection. Studying in Auditing 1 course was useless. In Auditing 2 course, I have to start again from scratch to learn theory. So please ensure that the same learning system applied to both courses to get the maximum results. (GI-1h)

4.6.5.2 Language

The second barrier in students' learning was the use of English language. Although, in the process of teaching and learning, the instructor used Bahasa Indonesia, the learning resources, such as the textbooks and auditing cases, were mostly in English. Learning auditing using English resources was difficult for many students. Students admitted that their English ability was sometimes insufficient to understand the content in the course:

> I have difficulty in English language, so, yeah, to understand audit in English is not easy. (GI-1b)
>
> The assignment is basically very practical and fit to assess the intended competence, such as Shoe Zoo, Vouch and Trace, making memorandum, vouching, sampling. But, because the cases were in English, I was a bit confused. (GI-2f)
>
> The language, because I am not good at English, so the learning materials might be easier to understand in Bahasa Indonesia. (GI-2c)

One student in the first group interview (GI-1g) specifically discussed his concern with English language. He explained that he was unable to develop adequate audit competence because of the language used in the textbook. Although he was fully aware that English is important for global accounting practitioners, he preferred to use the Indonesian language to study auditing. He described his feelings:

> The audit competence—this is the most important one. We need to adjust the language. As I said before, my problem is in English language. When we don't know the language, we don't know the content. I know that we are prepared to be a global accountant or global auditor, but, at least, please, the basic concept should be in our own language. (GI-1g)

To overcome the language barrier, students translated the audit materials into Bahasa Indonesia using language translation applications, such as Google Translator; however, the translation tools were not always useful or accurate. One student (GI-2e), who could not understand the auditing cases unless they were translated, explained that auditing has many specific terms, such as work papers, tick mark, vouching and tracing. Translation tools often cannot translate these terms appropriately. Another student (GI-2d) added that the translation was sometimes more difficult to understand, so students had to re-check the translation with the original English version.

Although students found that the use of English was a barrier to learning, using English also had positive aspects:

> The good thing is, now I know key terms of auditing in English. (GI-1b)

> Well, I know the textbook is in English, but I felt like this even enhance my audit ability. (GI-2a)
>
> Well, my vocabularies have improved, though. While translating, I also match the translated version with the original English version. You know, sometimes the translated version does not make sense. So, I have to manually fix it to make it easy to understand. Well, finally I learn on language as well. (GI-2e)

4.6.5.3 Insufficient Guidance

Students whose improvement was below the average of the group explicitly explained that they needed extra guidance to learn during the constructive alignment intervention. This was the only obvious barrier that was perceived differently by the less and the more improved students. The less improved students indicated that:

> The learning activities [under the constructive alignment intervention] helped me to achieve the intended competence, but there was something lacking … the instructor only explained the core things … so I wasn't told 'after doing this, then do this, this one must go first, then you do this one'. (GI-1b)
>
> The instructor has explained this and that … but I need more explanation from the instructor to understand. (G1-1e)
>
> I need detailed guidance to do the tasks, I am not the kind of person who can learn without guidance. There must be a very clear, detailed and repeated guidance on each task. (G1-1d)

However, unlike the less improved students, the more improved students considered that sufficient guidance had been given. They even asked for more challenging auditing cases with minimal guidance:

> Please only provide minimal guidance to do the assignments, so that the assignments would be a real challenge for us. Please let us be free to explore the way we deal with the auditing cases. This will increase our team capability and coordination to handle the auditing cases. (GI-1c)
>
> I think we need to face more auditing cases that have different angles, different problems, so when we start to work as an auditor, we will not rely on theories that might not be applicable in all audit contexts. (GI-1h)

> Please provide more complex problem to solve, with minimal guidance, so that we can think of which audit evidence should be confirmed, which misstatement is tolerable or not. (GI-2f)

Overall, the findings from the qualitative data indicated that the students generally agreed that studying under the constructive alignment intervention was preferable. The authentic elements in the alignment system, strengthened by feedback, encouraged their motivation to learn and improved their approach to learning, and, eventually, students improved in their technical and non-technical competence. Students admitted that their competence level was not yet satisfactory because of several barriers, including lack of continuity, language and insufficient guidance.

4.7 Summary

This chapter has described the results of the study. In doing so, the chapter has reported the results of the quantitative data analysis, followed by the results of the qualitative data analysis. The quantitative data suggested that, under the constructive alignment intervention, the students developed a higher level of technical and non-technical competence improvement, as seen in the results of the auditing tests and self-assessed competence questionnaires. Moreover, when the students continued their study without the constructive alignment intervention, they did not continue to develop their competencies. Analysis of the group interviews indicated that, when students received the constructive alignment intervention, they noticed that the goal, learning activities and assessment were congruent. They were motivated to learn, engaged in deep learning and consequently improved their competencies.

However, certain obstacles inhibited students' potential to fully develop their competencies. The students argued that learning auditing using English resources was challenging. Some students needed additional guidance from the instructor to help them learn. Lack of continuity was another central issue. Students indicated they needed a longer period of the constructive alignment intervention to develop competence at a higher level. When the constructive alignment intervention was not sustained, the students felt a reduced intensity to learn and experienced difficulties when working on auditing tests. A detailed discussion of these findings and their implications is presented in the next chapter.

CHAPTER 5
DISCUSSION

5.1 Introduction

The purpose of this study was to investigate whether technical and non-technical competence in an auditing course can be improved by implementing constructive alignment. The study employed a mixed-methods counterbalancing experimental design, where two phases of experiments were conducted in auditing classrooms to compare the development of technical and non-technical competence between groups that received and did not receive a constructive alignment intervention. Group interviews were conducted after the experiments to obtain an in-depth understanding of the perceived effects of the constructive alignment intervention and help explain the experiment results.

This chapter answers the research questions by discussing the findings of the experiments and interviews and connecting them to existing literature. The next two sections, Sections 5.2 and 5.3, discuss the effects of constructive alignment on the development of technical and non-technical competence, respectively. Section 5.4 discusses the students' perceived development of competence as a result of the constructive alignment intervention. Section 5.5 brings together the findings from the experiments and interviews to provide a comprehensive insight of students' competence development. Section 5.6 summarises the discussion chapter.

5.2 Impact of Constructive Alignment on Technical Competence

According to the IESs, accountants must develop and maintain professional competence that integrates the application of technical and non-technical competence to provide high-quality service (IAESB, 2019). To be technically competent, accounting students must be able to apply core discipline knowledge. The IES 2 (IAESB, 2019) identifies 11 technical competence areas. However, this study investigated only two competence areas (audit and information technology) because these two areas of competence are essential to auditors, yet are frequently considered deficient by employers and practitioners (Chaffey et al., 2011; Chowdhury & Dey,

2016; Heang et al., 2019; Setyaningrum et al., 2015; Sledgianowski et al., 2017; Suryani, 2018). For example, employers in Indonesian public accounting firms perceive accounting graduates as lacking audit competence because of an overemphasis on theoretical teaching of auditing (Setyaningrum et al., 2015; Suryani, 2018). Similarly, Chowdhury and Dey (2016) found that there is a gap between accounting students and practitioners related to information technology. Thus, universities are urged to equip students with audit and information technology competence to adapt to the dynamics of the auditing profession.

To equip students with technical competence, the intended learning outcomes of the auditing course in this study included the technical competence expectation, and the teaching-learning activities and assessments were aligned with the intended learning outcomes. This alignment system follows the principle of constructive alignment (Biggs, 1996, 1999; Biggs & Tang, 2011). In each phase of the study, students in the constructive alignment intervention group experienced this alignment system, and it was expected that this group of students would become more technically competent than students in the non-constructive alignment intervention group.

The results of the experiments indicated that, in each phase of the study, students in a constructively aligned auditing course had a higher level of technical competence improvement (audit and information technology) than did students in a non-constructively aligned auditing course. These findings were derived from the auditing tests (see Chapter 4, Table 4.4) and the self-assessed competence questionnaire (see Chapter 4, Table 4.7).

In Phase 1 of the study, students' improvement in audit competence was evidenced from their increased ability to apply auditing standards to perform an audit of accounts receivable, while students' improvement in information technology competence was evidenced from their increased ability to use Excel to complete an electronic work paper in an audit of accounts receivable. In Phase 2, the development of students' competence in audits was demonstrated by their increased ability to apply auditing standards to conduct a sales discount audit. In addition, their increased ability to use Excel to complete an electronic work paper in a sales discount audit indicated that students had developed information technology competence. The improvement made by the constructive alignment intervention group was significantly higher than

that of the non-constructive alignment intervention group. Therefore, the results of this study show that technological competence and audit competence can be developed within an auditing course by implementing constructive alignment.

These results of a positive impact of constructive alignment on students' learning outcomes are consistent with prior studies (Joseph & Juwah, 2012; Larkin & Richardson, 2013; Lui & Shum, 2012; Treleaven & Voola, 2008). For example, in the nursing discipline, Joseph and Juwah (2012) found evidence that students in a constructively aligned course felt they had acquired more nursing skills, such as venepuncture and cannulation, than had students in a less aligned course. In the context of a social work course, the application of constructive alignment contributed to students' confidence in applying social work theories in practice (Teater, 2011). Larkin and Richardson (2013) provided empirical data on the implementation of constructive alignment in an undergraduate occupational therapy program, and their results supported the notion that constructive alignment facilitates student outcomes.

Apart from confirming the effect of constructive alignment in the accounting discipline, the present study addressed the methodological limitations found in prior studies (e.g., Larkin & Richardson, 2013; Treleaven & Voola, 2008; Wang et al., 2013). Larkin and Richardson (2013) and Treleaven and Voola (2008) did not use a control group and advocated future studies to do so. This study responded to their call. Moreover, Wang et al. (2013) used a learning approach questionnaire to measure learning outcomes and called for more direct and objective measurement of students' learning outcomes. The use of an auditing test in addition to a self-assessed competence questionnaire in this study satisfied the need to present evidence of a more direct and objective measurement of students' learning outcomes, as called for by Wang et al. (2013).

5.3 Impact of Constructive Alignment on Non-technical Competence

The IAESB (2019) requires accounting graduates to possess not only technical competence but also non-technical competence. Combining these two broad categories of competencies will enable graduates to succeed in their career (Lawson et al., 2014). Non-technical competence – generally termed 'soft skills', 'pervasive skills' or 'employability skills' – refers to a set of competencies other than technical

competence, such as professional skills in IES 3, as well as professional values, ethics and attitudes in IES 4 (IAESB, 2019).

This study investigated four categories of non-technical competence: written communication, teamwork, professional scepticism and judgement, and ethics. These four areas of competence are frequently mentioned in the literature as critical graduate attributes for employability, yet are not common characteristics of accounting graduates (Abayadeera & Watty, 2016; Al Mallak et al., 2020; Dolce et al., 2020; Fatmawati et al., 2018; Karlina & Shauki, 2019; Kunz & De Jager, 2019; Maali & Al-Attar, 2020; Mah'd & Mardini, 2020; Oussii & Klibi, 2017; van Der Kolk, 2019). For example, accounting graduates surveyed in Dolce et al. (2020) indicated that they felt less competent in non-technical competencies, such as teamwork and communication. Moreover, practitioners surveyed in six countries in MENA perceived accounting graduates to be unaware of a code of ethics (Mah'd & Mardini, 2020). Therefore, universities are encouraged to integrate non-technical competence into the curriculum.

To equip students with non-technical competence, the intended learning outcomes of the auditing course in this study included the expectation of not only technical competence but also non-technical competence. Learning activities and assessment tasks were congruent with the intended learning outcomes, following the principle of constructive alignment (Biggs, 1996, 1999; Biggs & Tang, 2011). Students in the constructive alignment intervention were expected to acquire better development of non-technical competence than their counterparts.

The results of the experiments indicated that, in each phase of the study, students in a constructively aligned auditing course had a higher level of improvement in their non-technical competence than did students in a non-constructively aligned auditing course. These findings were derived from the auditing tests (see Chapter 4, Table 4.11) and the self-assessed competence questionnaire (see Chapter 4, Table 4.14).

In Phase 1 of the study, students' improvement in non-technical competence was evidenced by their increased ability to write audit memorandums, work in a team, apply professional scepticism and judgement through misstatement detection and explanation, and resolve ethical issues in an accounts receivable audit. In Phase 2, students' improvement in non-technical competence could be seen from their ability

to demonstrate non-technical competence in an audit of sales discounts. The improvement made by students in the constructive alignment intervention group was significantly higher than that of the non-constructive alignment intervention group. Thus, this study shows that non-technical competence required by employers and practitioners can be developed within an auditing course by implementing constructive alignment.

The positive impact of implementing constructive alignment on the development of non-technical competence found in this study is similar to the results of other constructive alignment studies (Larkin & Richardson, 2013; Teater, 2011; Treleaven & Voola, 2008), such as those by Treleaven and Voola (2008), Teater (2011), Larkin and Richardson (2013) and Joseph and Juwah (2012). In marketing, Treleaven and Voola (2008) found that students in an alignment system enhanced their confidence in developing graduate attributes, such as lifelong learning and critical thinking. Similar findings were reported in the social work discipline by Teater (2011), who examined the impact of constructive alignment on students' perceived confidence. The current study extended prior studies by examining four areas of non-technical competence, that are perceived to be particularly important for the accounting and auditing profession. In addition, this study better captured students' competence by using both subjective measures in the self-assessed competence questionnaire and objective measures in auditing tests.

Although the aggregate scores of non-technical competence showed significant differences in improvement between the constructive and non-constructive alignment intervention groups, there was one aspect of non-technical competence that was not significantly different between them: ethics. Both the constructive and non-constructive alignment intervention groups significantly developed their ethics competence in the first phase of study and remained constant in the second phase of study. As indicated by the group interview participants, ethics was equally covered in both groups, and the materials to learn ethics were available in textbooks. Students perceived that, unlike other competence areas, such as written communication, in which they had to 'create' a written product, working on ethical issues was easier. As long as they followed the code of ethics, they were confident in dealing with ethical issues. According to students, ethics can be learnt independently without any specific treatment.

There is debate in the literature as to whether ethics should be taught in accounting education (Taplin et al., 2018). It has been argued that ethical decision-making is a product of innate factors, such as parental style and environmental influence (Rebele & Pierre, 2019). It is unlikely that accounting education can play a significant role in reconstructing the ethical aspects of university-level students, who are mature in their ethical standards (Rebele & Pierre, 2019). However, research indicates that providing an ethics component in accounting education can raise the ethical awareness of students (Taplin et al., 2018). The significant improvement in ethics yet non-significant difference between the groups found in this study may imply two things. First, many approaches have been found to be useful to teach ethical issues (O'Leary, 2012). Second, raising ethical awareness can be achieved through minimal effort (Taplin et al., 2018).

5.4 Students' Perceptions of the Impact of Constructive Alignment

After completion of the experiment in each phase of the study, a small number of students were interviewed to capture their views about their competence development. This section describes five themes that were identified from the interview data.

5.4.1 Alignment in the Auditing Course

Interviewees in the constructive alignment intervention group were able to identify a connection between the course learning outcomes, learning activities, and assessments. For example, students understood that one of the intended learning outcomes was to be able to write an audit documentation, so they were engaged in the learning activities that required them to write, and then their ability to write an audit documentation was assessed. They believed these interrelated components helped them learn and facilitated their competence development (Biggs 1996, 1999; Biggs and Tang 2011). Students' satisfaction with the alignment in the course confirms the results of Larkin and Richardson (2013) and Teater (2011), who explored the impact of redesigning a course using the constructive alignment principle.

This strong alignment in the course design perceived by the constructive alignment intervention group was not shown in the non-constructive alignment

intervention group. Reconfirming the evidence from prior studies, where students perceived misalignment in the course design (Masava, Badlangana, & Nyoni, 2020; Palm & Bisman, 2010), students in the non-constructive alignment intervention group noted that the learning activities did not match the intended learning outcomes and the assessment. As a result, they struggled to complete assessments. The misalignment problem has been examined in various fields of study, such as in language (Kabouha & Elyas, 2015), medicine (Shipton et al., 2018), nursing (Masava et al., 2020) and science and engineering (Borrego & Cutler, 2010). Kabouha and Elyas (2015), Shipton et al. (2018) and Masava et al. (2020) concluded that students' difficulty in meeting the intended learning outcomes was mostly caused by a lack of alignment in the course design. In accounting education, while it is common to have declared learning outcomes that embrace the practical aspect of accounting, the learning activities and assessment tend to remain traditional, as indicated in Algharaballi's (2019) study. Lecturing is the dominant teaching method in universities and assessments often focus on memorization, rather than application of knowledge (Algharaballi, 2019). This misalignment problem could explain why students in the non-constructive alignment intervention group developed a lower level of competence than did students in the constructive alignment intervention group.

Although the students generally agreed that a strong alignment occurred in the constructive alignment intervention, there was an unexpected yet interesting finding with regard to information technology competence. Students indicated that constructive alignment in a course does not necessarily mean that students' expectations are met. In this study, students' ability to use Excel in an audit task was declared in the intended learning outcomes. Students practised Excel during the learning activities, and the assessments required them to demonstrate their ability to use Excel. Thus, the alignment was achieved. However, Excel was the only software taught in the auditing course and the use of a spreadsheet software alone did not fulfil students' expectations. The interviewees had perceptions that the auditing profession relies on high-end technologies. Such perceptions drove up their expectations and they wished to learn more relevant technological tools beyond Excel. Students wished to use audit-specific software in the auditing course so they could use the software in any audit situation. Unfortunately, their expectation was not met. Such results are similar to those in Krikorian, Patterson, Geringer, and Stratemeyer (2020), where many

students' expectations related to developing skills deemed important to their future careers received little priority during their studies in universities.

The use of Excel in this study was reasonable. The accounting education literature repeatedly shows that Excel is the main tool used by accountants and auditors, despite the existence of many other software options (Borkowski et al., 2007; Burnett, 2003; Lee, Kerler, & Ivancevich, 2018; Porter, 2019). Moreover, Excel has been used as an analytical tool in the CPA exam since 2018 (Baysden, 2018; Porter, 2019). This use in the CPA examination highlights the importance of Excel for accountants and auditors.

Despite the importance of Excel in auditing, recent studies concluded that students need to be familiar with audit-specific software such as IDEA and ACL (Blankley, Kerr, & Wiggins, 2018; Reinstein et al., 2018). Students equipped with the ability to use audit software would be more marketable to employers as an increasing number of accounting firms intensively use such audit software (O'Donnell & Moore, 2005). Thus, introducing audit software such as IDEA and ACL to students would help accelerate their agility in technology (AACSB, 2018; Sledgianowski et al., 2017). Given the importance of incorporating audit software in auditing courses, the majority of the AACSB-accredited accounting departments surveyed in Andiola et al.'s study (n = 69) included audit software, such as IDEA and ACL, to complement the use of Excel (Andiola, Masters, & Norman, 2020). The present study did not include audit software in the syllabus for practical reasons – the faculty did not have resources and appropriate teachers who were competent with audit software.

Although students in this study did not know exactly the types of audit specific software that might be best introduced in the auditing course, they were aware of the need to embrace relevant technology to enhance their learning in the university. This finding provides a strong message that university students' expectation is market driven (Krikorian et al., 2020), and alignment is less meaningful for students if the realities in the workplace are neglected (Willcoxson et al., 2010; Yap et al., 2014).

5.4.2 Motivation to Learn

Students explained that, when they studied in a constructive alignment intervention group, they were more motivated to learn. These findings align with existing constructive alignment studies that highlighted a strong link between constructive alignment and motivation to learn (Kumpas-Lenk et al., 2018; Lawson, 2011). In a study comparing the degree of alignment in several courses, Lawson (2011) found that highly aligned courses tend to increase students' motivation to learn. The present study extended Lawson's study in that it explored the reasons behind the increase in motivation.

The first component in the constructive alignment that motivated students to learn was the authenticity of the intended learning outcomes. As stated in the syllabus, the primary intended learning outcome of the course was to enable students to develop technical and non-technical competence in an audit of financial statements. This primary intended learning outcome was followed by specifying intended learning outcomes in six competence areas: audit, information technology, teamwork, communication, professional scepticism and judgement, and ethics. The formulation of learning outcomes addressing technical and non-technical competence is consistent with the IESs' mission to develop well-rounded aspiring professional accountants (IAESB, 2019). With these intended learning outcomes, students gained a sense of purpose to learn auditing. They knew that the goal of the course was to equip them with relevant competencies to become auditors who were proficient beyond content-knowledge. When the learning outcomes were formulated in 'a complete set of competencies' that were relevant to their future career, students became more motivated to learn. In contrast, when the design of learning outcomes emphasises the development of auditing knowledge only, it is less likely that students will be motivated to learn.

The effect of the formulation of learning outcomes on students' motivation has been studied by Kumpas-Lenk et al. (2018). Kumpas-Lenk et al. (2018) surveyed undergraduate students in Estonian universities from various programs, including business and law, social sciences, service, health and wellbeing, and humanities and arts, to examine the relationship between learning outcomes and students' motivation. They found that the formulation of learning outcomes influenced students' motivation

to achieve the learning outcomes. When learning outcomes were set at a lower-order cognitive level, students were less engaged in their learning. Students were more interested to learn when the learning outcomes were designed at the higher-order cognitive level. In other words, the higher level of cognitive demand in the design of the learning outcomes, the more motivated students are to learn, and vice-versa (Kumpas-Lenk et al., 2018).

However, the findings in the present study indicated that it was not the level of cognitive demand in the learning outcomes that mattered for students. Instead, what mattered to students was the relevance of the learning outcomes to their future career, or what is called the 'authenticity' of the learning outcomes (Macht & Ball, 2016). The literature has highlighted the relationship between authenticity and increased motivation (Macht & Ball, 2016; Masava et al., 2020; McNamara & McNamara, 2019; Roach, Tilley, & Mitchell, 2018), and suggests that educators embed authenticity in course design. To ensure authenticity is inherent in the intended learning outcomes, professional accounting bodies encourage accounting educators to adopt the learning outcomes in the IESs. The IESs were carefully designed by the IAESB based on current demands from the profession (Sugahara & Watty, 2016).

It must be noted that the experimental design in the study included the same intended learning outcomes in the constructive and non-constructive alignment intervention groups. The difference lay in the way the learning outcomes were communicated to students. In each study phase, the instructor clearly explained the intended learning outcomes to the constructive alignment intervention group students at the beginning of the course and during weekly meetings, so that students were aware of the course expectations. In contrast, students in the non-constructive alignment group did not receive such clarity – the instructor handed them the syllabus and allowed them to read the intended learning outcomes independently. Presenting the intended learning outcomes as merely administrative statements, rather than as the outcomes that students must demonstrate at the end of the course, has been reported in Kuwaiti accounting education (Algharaballi, 2019). This practice diminishes the importance of the outcomes to students (Algharaballi, 2019).

In this study, students' awareness of the intended learning outcomes did not occur automatically. Students in the constructive alignment intervention group

indicated that their motivation to learn auditing arose only after the instructor explained the expectations of the course. This finding indicated that while formulating authentic intended learning outcomes is crucial, clearly explaining the intended learning outcomes to students is equally important. The purpose of explaining the intended learning outcomes to students is to clarify the course goals and to indicate to students that the course is relevant to their future careers (Biggs & Tang, 2011; Boyle, Mahoney, Carpenter, & Grambo, 2014; Kabouha & Elyas, 2015; Stevens & Stevens, 1994). When students see the relationship between certain competencies and their opportunity for employment, they will be motivated to obtain such competencies (Stevens & Stevens, 1994). Therefore, the authentic intended learning outcomes that are clearly explained to students are important for increasing students' motivation to learn.

The second component within constructive alignment that motivated students to learn was the authenticity of the teaching-learning activities and assessment tasks. The authentic learning activities and assessments successfully changed students' negative perceptions of auditing (Dean et al., 2018; Mladenovic, 2000). Through authentic learning activities and assessments, students experienced the work that auditors undertake and understood that the work is not merely about number crunching. Having the opportunity to experience the complexity of the auditing profession is essential to students. The results of this study confirm Macht and Ball's proposition that authenticity should be an important part of constructive alignment (Macht & Ball, 2016).

To provide authenticity in the teaching-learning activities and assessment tasks in this study, the case study method was chosen as the main pedagogy. The case study method has been used extensively in auditing courses (Reinstein et al., 2018). It is useful to frame students' learning in a real context, which is often lacking in traditional teaching approaches (Boyce et al., 2001; Dennis, 2003; Drake, 2011). This framing helps students simultaneously learn concepts and apply their conceptual understanding in practice (Biggs & Tang, 2011). Most importantly, it provides opportunities for students to develop multiple competencies (see e.g., Andiola et al., 2018; Bagley & Harp, 2012; Miller & Savage, 2009; Peaden & Stephens, 2013). Solving authentic case studies in this course challenged the students in the study, yet it also motivated them to learn auditing. Students' enthusiasm to learn auditing using case studies was in

contrast to previous studies that reported students' avoidance of being actively involved in the learning process using case studies (Adler, Milne, & Stringer, 2000). Perhaps the case studies used in the other studies were less authentic, and thereby failed to stimulate students' motivation (Boyce et al., 2001).

The third component that motivated students to learn was feedback – an important feature in the constructive alignment. Similar to McCann (2017) and Gallagher (2017), the interviewees indicated that feedback from their instructor enhanced their motivation to learn. In this study, written and oral feedback to students in the constructive alignment intervention group was timely, detailed and constructive (Watty et al., 2013). Oral feedback was provided in weekly classroom meetings, and written feedback on assignments was given one week after the submission of assignments. The feedback was detailed and constructive, in that it informed students on what they did well or wrong in each assignment and how they could improve (Watty et al., 2013).

The data from the interview indicated that students were impressed by the feedback they received, especially because the feedback was authentic (Dawson, Carless, & Lee, 2020). Authentic feedback in this study was feedback that not only related to theory but was also directly connected to real-world professional auditing practice. For example, one concept in auditing that often confuses students is materiality. When students raised a question about materiality, the instructor provided explanations by offering personal examples of setting materiality when she worked as an auditor in a public accounting firm, instead of just quoting directly from auditing textbooks. This authentic feedback strengthened students' understanding of the auditing concept.

Although feedback is important, accounting has a poor reputation for giving feedback to students (Watty et al., 2013). This deficiency is possibly due to the large number of students in each accounting class (Watty et al., 2013). In this study, the problem was not only related to class size, but also to the coverage of competence areas that required feedback. The assignments given to students in the constructive alignment intervention group required the instructor to provide feedback on multiple competencies, such as audit, technology and written communication. Given this complex nature of assignments, the instructor worked with the research team to

provide sufficient written feedback, and students felt the positive impact of the feedback from this study.

5.4.3 Learning Approach

Approaches to learning can be classified into two types: surface and deep (Biggs & Tang, 2011; Davidson, 2002; Duff, 2004; Koh, 2014). A surface approach to learning is characterised by rote learning; while a deep approach to learning reflects students' motivation and occurs when students engage in appropriate and meaningful learning activities to achieve the learning outcomes (Biggs & Tang, 2011). The students indicated that, when they studied in the constructive alignment intervention group, they learnt better. They adopted a deep approach to learning, which they perceived as enabling them to develop competencies.

Alignment in the course design is a major determinant of a students' approach to learning (Biggs, 1999). As evidenced in this study and other constructive alignment studies (Lawson, 2011; Wang et al., 2013), the implementation of constructive alignment leads to students' improvement in their learning approach. Comparing two programs with different degrees of constructive alignment, Wang et al. (2013) revealed that students in the constructive alignment-oriented programs were more likely to apply a deep learning approach than were students in the less constructive alignment-oriented program. Similarly, in another study examining students from seven different programs, Lawson (2011) found that highly aligned courses foster a deep approach to learning. The current study built on Lawson and Wang's studies by revealing that, apart from the alignment, which encourages students to learn what is intended, an enhancer of the deep learning approach is the authentic nature of the alignment. The students perceived that the components of the constructive alignment mirrored day-to-day auditing tasks, which are complex and challenging; thus, they felt motivated to engage deeply in the course. Students indicated that, when they studied in the constructive alignment intervention group, they did not rely on textbooks to construct their knowledge. Rather, they used multiple learning resources, such as auditing standards and a code of ethics, and they researched the materials deeply. This authentic alignment enabled students to adopt a deep approach to learning (Macht & Ball, 2016).

The students reported that teamwork played an important role in their deep learning. When students studied in the constructive alignment intervention group, they reported that they enjoyed working with their team to solve authentic problems. They met regularly to work together. They exchanged ideas, recognised each member's strengths and weaknesses, and complemented each other. The results of the self-assessed competence questionnaire also indicated that students in the constructive alignment group had a higher level of improvement in their non-technical competence than did students in the non-constructively aligned auditing course. This result supports prior studies showing students' perceived improvement in their ability to work as a team member after undertaking accounting courses that implemented team-based learning (Ballantine & Larres, 2009; Christensen et al., 2019; Dyball, Reid, Ross, & Schoch, 2007). Ballantine and Larres (2009) underlined that, to achieve the best results in developing competencies, students must work in a team.

It must be noted that students in the non-constructive alignment group were also asked to work in a team. The difference in teamwork competence, as perceived by students in both groups, occurred because students saw different values of teamwork in the constructive alignment and non-constructive alignment groups. In the constructive alignment group, teamwork had a specific goal to solve the problem in the case studies. The authenticity of the case materials that resembled the complexities of the auditing profession encouraged students to work collaboratively, instead of individually. It seems that the more authentic the learning activities, the more effective the teamwork will be (Lehmann & Heagy, 2015; Mills, 2003). In contrast, students in the non-constructive alignment group were assigned a team to complete group presentations—a usual learning activity in the faculty. In this situation, students perceived group presentations as less authentic, less interesting and less valuable. Given that students saw different values of teamwork between groups, they acted differently. In the constructive alignment group, students worked effectively as a team; however, in the non-constructive alignment group, they divided the tasks and worked individually. Apparently, students in the constructive alignment group learnt how to be effective team members, as reported in the study by Dyball et al. (2007). This finding indicates that effective teamwork can be attained by exposing students to an authentic learning experience.

5.4.4 Perceived Development of Competence

Students perceived that, after studying in the constructive alignment intervention, they had developed technical and non-technical competence. They felt more satisfied and confident with their level of competence. Consistent with prior research evidence, such results demonstrate a connection between the implementation of constructive alignment and confidence in competence development (Teater, 2011; Treleaven & Voola, 2008). Teater (2011) found that the application of constructive alignment contributed to students' confidence in technical competence – that is, to apply social work theories in practice. Treleaven and Voola (2008) found that students felt confident in the development of two areas of non-technical competence: lifelong learning and critical thinking. Adding to prior studies, students in this study perceived they had developed not only technical competence, but also non-technical competence, in the context of the auditing course.

Nevertheless, students perceived they needed a solid foundation of technical competence (audit competence) to further develop non-technical competence, such as written communication and professional scepticism and judgement. While the structure to write an audit documentation can be learnt quickly, students needed to put their discipline knowledge into their writing product. Moreover, to critically assess audit evidence and make appropriate judgements, students needed to have a sound comprehension of audits. Hence, as was applied in this study, while non-technical competence is an integral part of teaching technical competence, the proportion of discussing technical competence outweighed the non-technical competence. This should not be interpreted to deemphasise non-technical competence development (Rebele & Pierre, 2019); rather, this is the way to support students to deepen their understanding of technical competence, so they can use this understanding to enhance their non-technical competence. The use of authentic case studies that covered the development of multiple competencies will enable accounting educators to embed technical and non-technical components into existing accounting courses.

5.4.5 Barriers

Despite students' perceived improvement of their competence, they realised their competence development had not yet reached a high level. The students perceived

some obstacles that prevented further competence development. Lack of continuity was the first obstacle in developing students' competencies. The students highly valued the idea of integrating technical and non-technical competence within constructive alignment. Given that the constructive alignment intervention in each phase was only six weeks, students would have liked to study in this alignment system for a longer period. The students perceived that a six-week constructive alignment intervention was insufficient to develop competence at a high level. The fall in performance of Group AB in Phase 2 supported the students' opinions. To effectively develop competencies, students should be required to practise competencies repeatedly in different contexts (Porter, 2019).

The importance of continuity was especially relevant for students who switched from receiving the constructive alignment intervention in Phase 1 to receiving the non-constructive alignment intervention in Phase 2. The students reported that the transition from the constructive to non-constructive alignment intervention led them to change their learning approach and reduce their effort to learn, and, consequently, students felt they did not make substantial progress in their competence development. This finding confirmed that students would adjust their learning approach in response to the learning environment (Wang et al. 2013). Maintaining the sustainability of the alignment system is important in providing a conducive environment for students to learn effectively.

Another factor that students felt hindered their development of competence was language. Despite their understanding of the benefit of using English materials to prepare them for their global profession, students felt they could develop a higher level of competence if the learning materials were in their own language, Bahasa Indonesia. Prior studies have reported Indonesian university students' difficulty with English texts (Nurweni & Read, 1999; Rahmatunisa & Agustiana, 2018). Rahmatunisa and Agustiana (2018) found that accounting students considered their English competency to read English materials at a weak level because of their limited accounting-related vocabulary. Another study more specifically discussed the vocabulary knowledge of Indonesian university students. Nurweni and Read (1999) stated that, even after students took English courses in Indonesian universities, they only had vocabulary knowledge of around 1,226 English words. This number is far below the threshold level of 4,000 to 5,000 words required to read academic texts. Given that most universities' texts are in English, this lack of vocabulary knowledge inhibits students'

comprehension of the subject matter (Nurweni & Read, 1999). Watty (2007) argued that the cause for the decreased quality in accounting education is due to students' difficulties in comprehending English materials.

The problem of using English materials to teach accounting or auditing is not unique to the Indonesian context. Non-English-speaking countries, such as China, Spain, Armenia and Russia, have reported similar problems (McGee, 2008; McGee & Preobragenskaya, 2008; Zhiwen, 2008; Zorio, 2008). To overcome this problem, local publishers usually translate the most popular accounting textbooks into local languages, yet the quality of translation can be of concern (McGee & Preobragenskaya, 2008). In this study, students found their own strategy to deal with language difficulties – they translated learning materials using available translation tools and manually checked and rechecked the translation version to make the sentences more understandable. In this way, they perceived that their auditing-related English proficiency had increased.

The third factor that hindered students' development of competence was the perceived insufficient guidance from the teacher. While several students who acquired high improvement in competence indicated that sufficient guidance had been given, less improved students felt they needed more guidance. The level of complexity in the case studies, which mirrored real auditor jobs, was significantly higher than that of traditional learning activities, which focused on memorising auditing knowledge. There is clear evidence that students have different abilities to deal with complex problems. While an earlier section (Section 5.4.3) described the importance of peer support to help students learn, this finding suggested that students also need extra guidance from the teacher. In a situation where students experience difficulty in addressing the issues in case studies, teachers can assist students by giving signposts that guide them on how to respond to the issues presented in the case (Boyce et al., 2001). However, providing excessive guidance represents teachers controlling students' learning and reduces students' autonomy to deal with the problems themselves. Thus, teachers must provide guidance at the appropriate moments, such as in the early phase of implementing a case study method (Boyce et al., 2001). This study applied Boyce et al.'s suggestion, where the teacher provided guidance by explaining and discussing the big picture of the case study before students started working collaboratively with their team member. The teacher also provided feedback

during the class meeting and after submission of each assignment. Rather than offering excessive guidance, an alternative way to address students' expectation for additional guidance is by matching highly improved students with less improved students in one team, so they can support each other (Ballantine & Larres, 2009).

5.5 Impact of Constructive Alignment on Competence Development

The overarching question of the study was: Does the adoption of constructive alignment in an auditing course facilitate the development of accounting students' competencies? This question sought to understand the whole pattern derived from the quantitative and qualitative data analysis. It is noteworthy from the experimental results that students in the constructive alignment intervention group developed a higher level of improvement in technical and non-technical competence than did students in the non-constructive alignment intervention group. The interview data helped interpret these results, with students indicating that the alignment system assisted their learning in several ways.

First, students acknowledged the importance of alignment in course design. Consistent with the principle of constructive alignment, the course design in the study demonstrated a clear congruency among the learning outcomes, learning activities and assessment. This alignment helped students learn and develop competencies effectively (Biggs & Tang, 2011). Second, the analysis results of the interviews indicated that, when students received the constructive alignment intervention, they were more motivated to learn. Motivation was triggered by the authenticity of the intended learning outcomes, the authenticity of the learning activities and assessment tasks that supported the intended learning outcomes, and the authenticity of the feedback provided. Third, the interview data also showed that, when students received the constructive alignment intervention, they adopted a deep learning approach. The students learnt effectively through learning from a range of resources to construct their understanding, and worked collaboratively with team members to help them learn. Consequently, students felt more confident about their improved competence.

Fourth, the interview data indicated that, although students in the constructive alignment intervention group perceived that they had developed their technical and non-technical competence, certain issues inhibited their potential to develop

competencies at a higher level. Students felt that learning auditing using English resources was challenging, and some students needed more guidance from the teacher to help them learn. Continuity was another important issue, as students indicated they needed a longer period of constructive alignment intervention to develop competence at a higher level. When the constructive alignment intervention was not sustained, students changed their learning approach and experienced difficulties in working on the auditing tests. This finding was consistent with the quantitative data, which showed that students who discontinued the constructive alignment intervention were unable to further develop their competence.

Thus, the conclusion that can be derived from integrating the experiment and interview data is that the adoption of constructive alignment can better facilitate the development of technical and non-technical competence than can non-constructive alignment. Figure 5.1 presents a model of the ways in which constructive alignment contributed to the development of competencies in the present study.

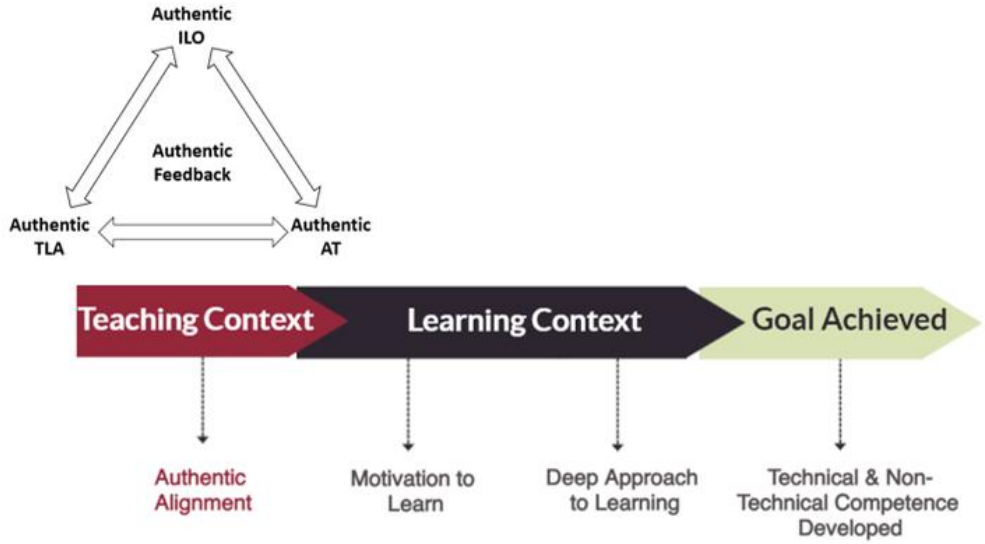

Figure 5.1 Model of Constructive Alignment's Impact on Competence Development

This model displays that the effect of constructive alignment on the development of technical and non-technical competence was indirect, rather than direct. Constructive alignment, if combined with authenticity, was effective in increasing students' motivation to learn and improving students' learning approach. Providing authentic experiences to students in all components of constructive

alignment – the intended learning outcomes, teaching and learning activities, assessment tasks and feedback – is the key to maintain motivation and deep learning. Unless students are motivated and continuously apply a deep approach to learning with peer and teacher support, competence development is difficult to achieve. The following descriptions discuss each component of the model in detail.

Teaching Context

The teaching context in the model (Figure 5.1) refers to 'what educators do' to facilitate learning. This is the crucial stage that determines students' motivation and approach to learning. What educators do depends on their mindset of teaching, whether knowledge focused or competence focused (Borgonovo et al., 2019). Those who emphasise knowledge will aim to transmit information, usually through teacher-centred models of teaching. Meanwhile, those who emphasise competence or outcomes will facilitate students to achieve the desired competence or outcomes. Competence-focused or outcome-based education is recommended in the literature because workplaces demand graduates who can demonstrate relevant competencies (IAESB, 2019).

As displayed in Figure 5.1, this study suggests that, to develop students' competencies, accounting educators must first create authentic alignment in the course design. Authentic alignment means that authenticity is inherent in all components of constructive alignment, including authenticity in the intended learning outcomes, the teaching-learning activities, the assessment tasks and the feedback. Authenticity is an additional element that was added to the original constructive alignment framework to reflect the findings of this study. Alignment alone is not meaningful for students if authenticity is neglected. Authentic alignment must be sustained to maintain a conducive environment for students to learn.

To create authentic intended learning outcomes, accounting educators should adopt the learning outcomes in the IESs. The learning outcomes in the IESs have been modified frequently by the IAESB to reflect the current and future demand of the accounting profession. Therefore, these learning outcomes are highly relevant for students' future career. To provide authenticity in the teaching–learning activities and assessment tasks, accounting educators can use case studies that mirror the work of the profession. A case study situated within collaborative learning helps students gain

real-life learning experiences and learn multiple competencies at a time. The use of a case study for assessment challenges students to explore answers that they cannot find easily in textbooks. Accounting educators can use other methods, such as simulation or business games, as long as the methods are authentic and stimulate students to engage in activities that are appropriate to achieve the intended learning outcomes. Moreover, to provide authentic feedback, accounting educators should connect the feedback given to students to real-world professional accounting and auditing practices. Given the practical nature of auditing courses (Barac et al., 2016), students need feedback beyond what is stated in auditing textbooks. Auditing textbooks often consist of difficult technical terms that must be supported by authentic feedback to help students' learning. Given that auditing textbooks are mostly written in English, authentic feedback will also help students deal with difficulty in understanding English materials.

As discussed in the previous sections, students perceived their learning experiences during the constructive alignment intervention as authentic, although they did not directly engage in a real workplace setting (e.g., an internship). The relevance of the intended learning outcomes to their future career and the resemblance of the teaching–learning activities and assessment tasks to auditing practice, strengthened by authentic feedback, were the components of greatest importance to students. This finding supports Roach, Tilley, and Mitchell's (2018) work, which described that authentic learning does not have to be physical realism, such as sending students to work in companies. Instead, cognitive realism—which provides the relevance and resemblance of what happens in the real-world context—can also offer a rich sense of authenticity to students. Therefore, providing authentic learning does not need to wait until students are immersed in real work settings; instead, authentic learning can be adopted in classroom teaching (Roach et al., 2018).

The need to add authenticity in the constructive alignment framework was advocated by Macht and Ball (2016) in their conceptual study. Macht and Ball proposed combining two fundamental frameworks in education—constructive alignment and authenticity—because of the explicit link between these frameworks and entrepreneurship education. While Macht and Ball addressed the entrepreneurship educators' community, their idea about authenticity in constructive alignment has proved relevant in the accounting education context, as outlined in this study.

However, maintaining alignment and authenticity in accounting education is not an easy task. Teaching students to develop multiple competencies in the alignment system requires more effort than teaching in the traditional approach and, most importantly, teachers need to develop their knowledge beyond discipline-specific areas (Dean et al., 2018). For example, to develop technological competence that meets students' expectation in this study, teachers should be competent and confident in using audit-specific software. Unfortunately, the literature has revealed that a lack of competent staff to teach new software in auditing courses is the major impediment to educating students with relevant technological tools (Andiola et al., 2020; Kotb et al., 2019). The cost associated with introducing the new software is an additional problem (Andiola et al., 2020; Kuruppu, 2012; Pelzer & Delaurell, 2019; Sledgianowski et al., 2017).

Moreover, learning materials that cover technical and non-technical competence are not readily available. Access to reputable journals that contain quality case studies, such as *Issues in Accounting Education* and *Journal of Accounting Education*, might not be available in every university. The university at which this study was conducted is such an example, as it did not have access to these journals. While case studies can be found in accounting textbooks, they are usually narrow in scope and do not represent authentic case studies (Samkin & Keevy, 2019; Taplin et al., 2018). Creating custom-made case studies requires significant time, effort and credibility; thus, Samkin and Keevy (2019) suggested involving external stakeholders, such as audit practitioners, to create authentic case studies.

Further, accounting educators need to have a strong professional background to be able to bring authenticity into their accounting classroom. In Indonesia and other countries, the problem is that many accounting educators do not have a professional background (O'Connell et al., 2015; Suryani, 2018), which results in an over-reliance on textbooks and fails to relate the theory in textbooks to current business practice (Setyaningrum et al., 2015; Suryani, 2018). Fortunately, the instructor in the present study was an auditor in a public accounting firm. Therefore, students could clearly see how she was able to bring authenticity into the auditing course.

Learning Context

Learning context in the model (Figure 5.1) refers to 'what students do' to achieve the learning outcomes. Learning context consists of students' motivation to learn and approach to learning. Learning context generally depends upon the teaching context (Biggs, 1999). Biggs (1999) used an analogy of 'Susan and Robert' to illustrate how two type of students differ and its practical implications for teaching. Instead of using 'Susan and Robert' as an analogy, I would like to present two main characters on popular television series *Young Sheldon*, Sheldon and Missy, to provide a contemporary example of student diversity.

Sheldon and Missy are fraternal twins. Sheldon is a natural enthusiast student who always studies hard. He has an ambition to be a scientist and so is curious in learning about subjects that other students might perceive as challenging, such as mathematics, science and technology. He attends classes with commitment and sound knowledge. Students such as Sheldon can teach themselves without needing much help from teachers (Biggs, 1999; Biggs & Tang, 2011). Missy is the opposite of Sheldon. Unlike Sheldon, Missy displays no interest in studying. She prioritises watching television, rather than schoolwork. Students such as Missy comprise the majority in today's classes (Biggs, 1999; Biggs & Tang, 2011). They require good teaching to increase their motivation to learn and enable learning to occur.

Through this study, authentic alignment was demonstrated to convert students who were unmotivated to learn auditing into students who were motivated and learnt deeply. While the alignment provided a clear pathway to learn, the authenticity sparked motivation to learn. Authenticity gave a sense of value and professionalism to students because of the relevance of the learning to their future career and the resemblance of their learning to the auditing profession. Motivation has dual functions – it initiates learning and maintains engagement (Biggs & Tang, 2011). Students must see the value of learning to initiate learning and maintain engagement. If students cannot see the benefit of learning, it is difficult to expect students to learn (Biggs & Tang, 2011). This explains why many studies have found that students who perceive accounting to be useful for their future jobs perform better in accounting courses (Bonaci, Muţiu, & Mustaţă, 2010; Byrne & Flood, 2008; Davidson, 2002; Guney, 2009).

Motivation to learn is an important determinant of students' performance (Koh, 2014). Motivation and performance are positively correlated because students who are highly motivated are more likely to apply effective learning strategies and thus perform better (Everaert, Opdecam, & Maussen, 2017; Gedera, Williams, & Wright, 2015; Koh, 2014). Students in the constructive alignment intervention group were motivated to learn; thus, they engaged in deep learning, which helped them perform significantly better than students in the non-constructive alignment intervention group. This finding aligns with Everaert et al. (2017), who found a positive correlation among motivation, a deep learning approach and performance. Similarly, Lucas and Mladenovic (2014) stated that students' approach to learning determines students' performance, with a deep approach to learning associated with higher performance. Accounting students with a deep approach to learning usually achieve better academically than do students with a surface approach to learning (Davidson, 2002; Duff, 2004; Everaert et al., 2017).

A dominant model to understanding students' approach to learning is the '3P' model (presage–process–product) (Duff & McKinstry, 2007). The 3P model demonstrates that students' approach to learning is influenced by presage factors, such as students' perceptions of the task requirements, learning context, learning orientation and educational experience (Duff & McKinstry, 2007). Unlike the 3P model, the model in Figure 5.1 confidently suggests that students' approach to learning reflects students' motivation, which is affected by the degree of authentic alignment. This argument is supported by Barac et al. (2016), who found that the reason students in auditing courses adopt a surface approach is the superficial teaching and lack of alignment in the teaching context. Thus, whether students will adopt a deep or surface approach to learning is strongly influenced by how teachers design the teaching and learning environment (Kember, Webster, & Chan, 2020)

To help students learn deeply, a support system from peers is essential. Students cannot work individually to achieve the goal of developing technical and non-technical competence; they need to collaborate with their peers. This need for peer support aligns with the view of social constructivism. Social constructivism is concerned with the importance of a collaborative process to help individuals' construction of knowledge (Alt, 2015). The team setting in this study facilitated students' deep approach to learning (Volkov & Volkov, 2015). At the same time,

students learnt how to be effective team members (Dyball et al., 2007). Prior literature has criticised the limited role of accounting education in providing a meaningful teamwork learning experience for accounting students (Courtis & Zaid, 2002; Dolce et al., 2020; Maali & Al-Attar, 2020; Wells et al., 2009). This study suggests that effective teamwork can be attained by exposing students to authentic learning experiences.

Goal Achieved

The goal of teaching and learning is to achieve the intended learning outcomes. In this study, the intended learning outcomes were to develop students' technical and non-technical competence. Developing technical and non-technical competence has been advocated in the literature, such as by the IAESB IESs (IAESB, 2019), AIPCA (2018) pre-certification core competency framework, Pathways Commission (Pathways Commission, 2012), and integrated competency-based model (Lawson et al., 2014). The literature shares similar arguments that accounting educators must simultaneously develop students' competencies that are relevant to the current practice of the profession (Porter, 2019), such as technological competence, communication, teamwork, professional scepticism and judgement, and ethics, in addition to traditional content-oriented competencies. This study has addressed the call for developing competencies, as advocated by the IAESB (2019), AICPA (2018) and Lawson et al. (2014), by providing students with an opportunity to integrate technical competence (audit and information technology) and non-technical competence (communication, teamwork, professional scepticism and judgement, and ethics) into a core subject of accounting – in this case, the Auditing 2 course.

Through examining the auditing tests, self-assessed competence questionnaire and students' interviews, this study found that the goal to develop students' competencies was achieved. Students in the constructively aligned auditing course had a higher level of improvement in competencies than did students in the non-constructively aligned auditing course because of their higher motivation and deep learning. Biggs stated that whether students can achieve the desired outcomes largely depends on their efforts (Biggs, 2014). The teacher's role is to design a learning environment that enables students to learn in a meaningful way to achieve the desired

outcomes (Biggs, 2014). In this study, high motivation and deep learning were influenced by authentic alignment in the teaching context. Therefore, there is a clear interaction between teaching, learning and outcomes.

It is important to note that, in the quantitative experiment stage, this study used subjective and objective measures to examine the effectiveness of the constructive alignment intervention. The subjective measure aimed to assess students' perception of their level of competence. The administration of a subjective measure, such as a self-assessed competence questionnaire, is quick and easy. However, for quality assurance purposes, this study suggests that the subjective measure should be accompanied by an objective measure because the results of both measures may not always align. As indicated in this study, both measures had equal results in Phase 1, but there were discrepancies between the two measures in Phase 2. In Phase 2, the group of students who experienced discontinuation of constructive alignment responded in the questionnaire that their level of competence increased, while the results from the auditing test (objective measure) indicated steady progress. Thus, it seems that students were overconfident on their competence improvement, while their auditing test revealed otherwise. This finding aligns with Hagstromer, Ainsworth, Oja, and Sjostrom (2010) who found that the use of a questionnaire to measure physical activity overestimated actual physical activity. Adding an objective measure to the common usage of subjective measure is useful for attaining a more complete picture of students' competence development. Subjective and objective measures function optimally when used together (Drummond & Sweeney, 2017).

There is pessimism in the accounting education literature regarding whether developing students' technical and non-technical competence can be attained within each core accounting subject. The accounting curriculum has been overloaded with technical knowledge components, leaving accounting educators little leeway to teach other competencies, such as ethics, thinking skills and communication (Rebele & Pierre, 2019). Considering the time constraints, Rebele and Pierre (2019) argued that undergraduate accounting educators should focus on developing technical knowledge of accounting. Contrary to Rebele and Pierre (2019), the findings of this study suggest that accounting educators who teach core accounting subjects should be confident in developing competencies beyond content knowledge. The findings indicated that the

students had developed non-technical competence along with technical competence after studying in a constructively aligned auditing course.

The impact of constructive alignment on students' learning has typically been investigated in isolation. For instance, constructive alignment has a strong link with students' motivation to learn (Kumpas-Lenk et al., 2018; Lawson, 2011), constructive alignment facilitates a deep learning approach (Lawson, 2011; Wang et al., 2013) and constructive alignment positively impacts students' perceived skills development (Dean et al., 2018; Joseph & Juwah, 2012; Larkin & Richardson, 2013; Lui & Shum, 2012; Treleaven & Voola, 2008). This study extends the literature by presenting an integral facet of teaching, learning and outcomes within the implementation of constructive alignment, as seen in Figure 5.1.

5.6 Summary

This chapter has provided a detailed discussion of the study results and has shown that a constructively aligned auditing course is useful to develop students' competencies. The alignment of the intended learning outcomes, teaching–learning activities, assessment tasks and feedback, coupled with authenticity, contributed to the constructive alignment effectiveness. Authentic alignment increased motivation and a deep learning approach, which facilitated competence development. The next chapter presents a summary of the study results, contributions, implications and limitations, and suggests recommendations for future research.

CHAPTER 6
CONCLUSIONS

6.1 Summary of Results

With the dramatic change in the business environment, the increasing demand on the accounting and auditing profession, and the longstanding competence gap in accounting education, developing students' competencies beyond content knowledge has become an important agenda for universities. This study examined the impact of constructive alignment on the development of accounting students' technical and non-technical competencies. Accounting students in an auditing course participated in an experimental study that measured the development of competencies from several sources, including students' performance in auditing tests, a self-assessed competence questionnaire and interviews.

Overall, the study showed that implementing constructive alignment better facilitated the development of students' competencies than did non-constructive alignment. The results indicated that students in a constructively aligned auditing course displayed greater improvement in both technical and non-technical competence than did students in a non-constructively aligned auditing course. The results of group interviews confirmed the usefulness of constructive alignment to develop students' competencies. While this study concurs with previous studies that constructive alignment can promote learning and produce enhanced improvement of students' competencies, the results showed that authenticity must be inherent in the alignment system to positively contribute to constructive alignment effectiveness. Linking constructive alignment with real-life auditing practice is an effective way to enhance students' learning. Authentic alignment increased motivation and enhanced a deep learning approach, which facilitated competence development.

The participants expressed concerns about barriers to developing competencies at a higher level, indicating that students are still in the middle of their journey towards developing technical and non-technical competence. Educators must beware that the positive effect of constructive alignment is not sustainable unless the system is implemented for a reasonable period. Educators must also devote attention to students' individual differences, such as language and the need for extra guidance, which affect

the development of their competencies. Considering these factors in the implementation of constructive alignment would be beneficial for future research.

6.2 Contributions

This study contributes to accounting education in practice, theory and methodology. From a practical perspective, this study provides empirical evidence regarding the importance of aligning components in course design to develop students' competencies, which can assist accounting educators and universities in better preparing students for their future careers. In light of the growing demand from industry and professional accounting bodies for accounting programs to meet certain standards, such as the IESs, this research provides useful guidance to universities working to implement the standards. The model shown in Figure 5.1 helps universities and educators consider components of course design that must receive considerable attention and students' progress within the implementation of constructive alignment.

Moreover, the findings in this study are relevant for the development of competencies in accounting education in Indonesia and can benefit the learning of Indonesian students. Research continues to indicate that accounting programs in Indonesia still struggle to satisfy the need to produce quality graduates with relevant competencies (Adhariani, 2020; Phan et al., 2020; Prayanthi & Nelwan, 2019; Utami et al., 2011). This is also evident in a study by Setyaningrum et al. (2015) who found that Indonesian accounting graduates who obtain junior auditor positions do not meet their employers's expectations. A common criticism of Indonesian accounting education is on pedagogical strategy that is teacher-centred, overemphasis on teaching theoretical content knowledge and minimal support for accounting students to develop their competence beyond content knowledge (Setyaningrum et al., 2015; Suryani, 2018). The pedagogical strategy focus on content knowledge transmission is similar to that in other countries, as reported by Fouché (2013) and Yap et al. (2014). Research on constructive alignment as presented in this study contributes to help students achieve the desired competencies and better prepare accounting graduate adaptability to the work environment.

From a theoretical perspective, the findings in this study suggest that constructive alignment must be presented in an authentic way. Authentic alignment is

a customised framework that was found to be useful in promoting students' learning and helping students achieve the desired outcomes. Despite the popularity of constructive alignment, unfortunately, there is a lack of a model to illustrate how constructive alignment affects the development of students' competencies, in a logical and systematic manner. The model of constructive alignment's impact on competence development depicted in Figure 5.1 expands those that have been developed by prior studies (e.g., Lawson, 2011; Vitale, 2010). In their conceptual model, Vitale (2010) visualised that the implementation of constructive alignment directly relates to the achievement of learning outcomes, while Lawson (2011) envisioned that the implementation of constructive alignment affects students' motivation and approach to learning. The model displayed in Figure 5.1 modifies the original constructive alignment framework in the teaching context by adding authenticity, and shows comprehensively the relationship between authentic alignment and motivation, learning approach and competence development.

From methodological perspectives, this study contributes to research by offering a novel design – a counterbalancing mixed-methods experimental study. Although a counterbalancing design was initially aimed to address ethical requirements, the design was useful to indicate that the value of an educational intervention is greater if the intervention is sustained. The experimental design addresses the call from accounting education scholars (e.g., Apostolou et al., 2020; Apostolou et al., 2013; Rebele & St. Pierre, 2015) to use experimental designs to identify the best way to develop accounting students' competencies and provide evidence of its effectiveness. The study controlled for confounding variables, such as teachers, textbooks, course topics, in-class study periods, intended learning outcomes and summative assessments, which has not been done in the past. Moreover, the use of both subjective and objective measures in this study contributes to highlight the discrepancies between the two measures. Subjective and objective measures may not always agree—particularly as indicated in the second phase of this study. The subjective measure helped the researcher know what students stated about their improvement of competencies, while the objective measure gave the researcher the ability to investigate whether students' competencies were really improving. While both types of measurements are important to examine the effectiveness of an educational intervention, they should be used together to complement each other.

6.3 Implications

The results of this study have several implications for accounting educators, universities and professional accounting bodies. The implications are described in the following subsections.

6.3.1 Implications for Accounting Educators

Both the quantitative and qualitative results confirmed that constructive alignment was found to be useful for developing technical and non-technical competencies. Accounting educators who intend to develop students' competencies can redesign their courses according to the constructive alignment framework by embedding authenticity and recognising the inhibiting factors within its implementation. The challenge for accounting educators is to remain aligned and authentic. As described in the discussion chapter, the initiative to develop students' technical and non-technical competencies within the alignment system requires effort and resources. Accounting educators must first have willingness and commitment to develop students' competencies, as required by the accounting profession.

Moreover, developing students' technical and non-technical competencies requires educators to understand more than content knowledge. Educators must upgrade their competencies through active involvement with professional accounting bodies and industry (AACSB, 2020). Professional accounting bodies generally provide regular updating of current and new accounting and auditing practice. For example, during the COVID-19 pandemic, professional accounting bodies, such as the Indonesian Institute of Certified Public Accountants (IAPI), have issued new regulations related to the conduct of auditing practice. The IAPI has then provided training to accounting educators on how to use technology to undertake remote auditing. Through active involvement with professional bodies, accounting educators – especially those who do not have a practitioner's background – are not left behind with the latest developments of the profession.

Accounting educators may also choose to teach collaboratively with their peers through team teaching. Team teaching is a good way to share expertise between lecturers (Singleton, 2019). Particularly in terms of developing technological

competence, lecturers who find it difficult to maintain or develop new competency with technology can collaborate with other lecturers who are more technologically proficient. Team teaching is also a useful approach to strengthen feedback and provide additional guidance to students that a single lecturer may be unable to offer in large class sizes (Lasagabaster, 2018).

To accommodate the inclusion of competencies other than content knowledge into class teaching, accounting educators should reduce the coverage of technical content (Needles, 2014). Once students are overloaded with content knowledge, they may experience difficulty learning deeply and developing other important competencies, such as information technology, communication, teamwork and ethics. The literature indicates that the vast amount of theoretical content in accounting and auditing is a challenge to customising the curriculum (Hossain, Kummer, & O'Leary, 2015; Willis, 2016). While the decision to compile the course sequence in the accounting curriculum is the responsibility at the accounting department level, educators in each course could choose topics that are most relevant to teach. Guidance on which topics are most relevant to teach can be obtained from published research (for guidance on the most relevant topics to teach in auditing, see, e.g., Armitage & Poyzer, 2010; Blouch et al., 2015). Topics related to auditing practices – such as audit evidence and documentation, information technology audit, analytical procedures and substantive testing – are the most important topics to teach in the classroom because these topics signify the areas where junior auditors spend significant time in an audit engagement (Blouch et al., 2015). Meanwhile, topics related to concepts such as opinion-related topics are the least important topics to teach in classrooms and can be learnt independently by students (Blouch et al., 2015).

Accounting educators also need to carefully select learning materials that cover multiple competencies to provide opportunities for students to experience, as much as possible, the current reality of the accounting and auditing world in the classroom. Educators may access learning materials from accounting journals and websites that publish teaching case studies. However, based on the researcher's experience in this study, it is difficult to find cases that cover all the competencies needed. Alternatively, educators may modify existing cases or collaborate with practitioners to design learning materials that are authentic and accommodate the need to develop technical and non-technical competence.

6.3.2 Implications for Universities

Accounting educators cannot work alone without support from the institution. Considering the positive impact of constructive alignment on students' competencies, universities and accounting departments should encourage accounting educators to continuously implement constructive alignment in auditing and other accounting courses so that students can quickly adapt to the alignment system. Institutional guidance is usually an effective driver to encourage good practice in classrooms (Biggs & Tang, 2011). Universities could provide pedagogical training for accounting educators to help change their mindset from knowledge-focused to competence or outcome focused (Lawson, 2011). A teaching and learning centre that supports the continuous implementation of constructive alignment and improvement in teaching and learning could be established in the accounting department to complement the existing teaching and learning unit at a university level.

Moreover, universities should remove institutional constraints that may impede accounting educators' efforts to develop students' competencies. The common constraint is a high student–staff ratio (Howcroft, 2017). This high student–staff ratio creates an increase in the educators' workloads, such as the number of hours to teach, prepare classes and complete assessment marking. Implementing an effective student–staff ratio may provide an opportunity for accounting educators to upgrade their competencies, redesign their courses according to the constructive alignment framework, design authentic learning materials, and provide feedback and individual attention to students.

This study found that constructive alignment had greater value when presented in an authentic manner. It can be difficult for accounting educators to bring authenticity into their classrooms unless they have an appropriate professional background. Given that many accounting educators are not practitioners (O'Connell et al., 2015; Suryani, 2018), universities should provide lecturers with opportunities to practise their profession or at least learn competencies from practitioners. Lecturers could work as practitioners while they teach, as do other professionals, such as lawyers and medical doctors. This would be possible if the student–staff ratio and workload were amenable; otherwise, lecturers will not have time to upgrade their competencies or even become practitioners.

Conversely, universities could provide opportunities for practitioners to become accounting educators (AACSB, 2020; Biagi, 2018; Bishop, Boyle, Carpenter, & Hermanson, 2016; George, 2017; Prather-Kinsey, Savage, & Exline, 2018). There are different obstacles to having practitioners join universities, such as the age restriction in Indonesia and the mandatory requirement of a PhD degree in other countries. In Indonesia, the maximum age limit to apply for an academic position is generally 35 years. A recent regulation issued by the Indonesian government in late 2019 (Presidential Decree of Indonesia, 2019) stated that the age limit for those who have acquired doctoral qualifications is 40. In other countries, such as the US and Australia, a PhD degree is compulsory to become academics because of AACSB accreditation requirements and government regulations. These age limitations and PhD degree requirements restrict practitioners from becoming lecturers. The drawback for universities is that there are few accounting educators with real-life accounting and auditing insight to bring into their classrooms.

Furthermore, universities could support accounting educators with funding to update their competencies (Andiola et al., 2020). Professional certifications and continuing professional development programs conducted by professional accounting bodies usually require significant funding. Funding support from universities could motivate accounting educators to seek relevant training to keep up to date with the latest practice of accounting, auditing and technology. In addition, universities could provide incentives or rewards for educators who demonstrate teaching excellence. At the moment, rewards for educators are usually provided based on their number of publications (Bui & Porter, 2010; Hancock, Marriott, & Duff, 2019).

The results revealed that students have difficulty understanding English materials. The challenge for universities is to support these students to increase their English proficiency. There are no simple solutions to address this problem. Business schools in Indonesia generally provide English courses for business purposes. However, as students usually only attend two hours of formal English courses per week and do not practise their English outside classrooms, their English proficiency is lagging behind other Asian countries, such as Malaysia and Singapore (Pritasari, Reinaldo, & Watson, 2019). To overcome the language problem, universities could encourage students to engage in extensive reading and listening available on the internet or other suitable materials (Nurweni & Read, 1999), and test their English

proficiency prior to graduation (Pritasari et al., 2019). Moreover, universities could create an English-rich environment that immerses students in using English as a medium of communication, rather than merely as part of a course.

6.3.2 Implications for Professional Accounting Bodies

Knowing that authenticity must be inherent in the alignment system, professional accounting bodies can continue to provide support through professional development education for accounting educators that is authentic, cost-effective and accessible. Professional accounting bodies could leverage technology to conduct online training for accounting educators. For example, as a result of the COVID-19 pandemic, professional accounting bodies in Indonesia, such as the IAI and the IAPI have changed the face-to-face mode of training to virtual training (Institute of Indonesia Chartered Accountants, 2020). The face-to-face mode was relatively costly and inaccessible for accounting educators in remote areas. The shift from face-to-face to virtual training should benefit accounting educators across different regions in Indonesia to improve their competencies to be relevant to the current practice of accountants and auditors.

Professional accounting bodies could encourage practitioners to collaborate with accounting educators to design authentic learning materials (e.g., case studies) that allow students to learn multiple competencies and that educators could use in the accounting and auditing classrooms. If possible, professional accounting bodies could create a specific website dedicated to compiling these learning materials. The IFAC accountancy education e-tool (available at https://education.ifac.org/) is a useful example of a website to help educators navigate the IESs easily. Nevertheless, the IFAC accountancy education e-tool would be more useful if it contained learning materials suitable to assist educators to develop technical and non-technical competence within each core accounting subject.

6.4 Limitations and Recommendations for Future Research

As with any empirical research, there were limitations to this study. The auditing tests required students to work in teams because one goal of the study was to develop teamwork competence. Each team consisted of two students, except for three

teams, given the odd number of students in the classrooms. Thus, the results of the test represented teamwork and not individual student work. Working as a team was based on social interdependence and motivational theories, where, through learning together as a team, members 'subsequently would perform better as individuals' (Shawver, 2020, p. 258). The self-assessed competence questionnaire and interviews also confirmed that students' individual competencies had improved. Nevertheless, future studies may consider objectively measuring students' individual competencies after they are measured at the team level.

The constructive alignment intervention was designed by the researcher, yet undertaken in the classrooms by an auditing instructor. While the separation between teaching and research helped eliminate bias in the experiment, it also potentially limited the intervention effectiveness, as experimenting with the adoption of constructive alignment in the auditing course was a first-time experience for the instructor. The present study can be viewed as a starting point for future constructive alignment research in accounting education. Future research should involve accounting or auditing instructors who have experience in implementing constructive alignment.

Another limitation of this study related to the length of the intervention. The intervention in each phase of the study was six weeks. Future studies may consider extending the intervention duration to determine the 'staying power' of constructive alignment and help researchers better understand the effect of educational interventions on students' learning outcomes.

The study was conducted in a university, so the conclusions may not represent accounting students enrolled in other universities. However, the evidence that a constructively aligned accounting course significantly improves students' development of competencies will be useful in many contexts. Competencies investigated in this study – such as communication, teamwork, professional scepticism and judgement, and ethics – are applicable in many contexts, so future studies could consider implementing constructive alignment in other subject areas.

The study did not examine all competencies in the IESs. Only six competence areas were investigated, including audits, information technology, teamwork, written communication, ethics, and professional scepticism and judgement. These six

competence areas are considered critical in the auditing profession, yet have received little attention in auditing classes. Future studies could seek to examine the development of other competence areas in the IESs, such as financial accounting or taxation.

The core accounting subjects in accounting curriculum as well as the technical and non-technical competencies that must be equipped by accounting students may be changing and evolving overtime due changes in the business environment. It is assumed that the competence areas investigated in this study are still relevant for educating future generation of accountants. However, as routine tasks of accountants and auditors have been gradually replaced by technology, the demand for accountants with specific competencies in advisory, consulting and data analytics is growing rapidly (Ackerman, 2019; Vasarhelyi, Kokina, & Kozlowski, 2017). Consequently, the accounting curriculum at universities will need to be modified to better reflect the demand for new competencies. Future studies may consider exploring the major curriculum changes that have been implemented by accounting programs at universities worldwide.

The study was conducted with students who spoke English as a foreign language. The literature indicates that students' level of English has a relationship with students' performance in accounting courses (e.g., Grace & Black, 2011; Ryan, Bhattacharyya, Stratilas, & Goela, 2012; Watty, 2007); thus, future studies could examine whether the same conclusions from this study hold for students whose first language is English or students who speak English as a second language.

This study focused on students' perspectives. Future studies may consider examining teachers' perspectives in implementing constructive alignment in accounting and auditing courses. Learning from teachers' experiences would be useful to understand the challenge to design and implement constructive alignment.

6.5 Concluding Remarks

To conclude, this study has indicated that broadening the scope of accounting education to develop competencies beyond content knowledge is not an easy task, yet is not impossible. Accounting educators, with support from universities and professional bodies, can be confident in investing their efforts into redesigning their accounting and auditing courses according to a constructive alignment framework

that is authentic—or 'authentic alignment'. With authentic alignment, accounting educators should be able to help students develop competencies and subsequently reduce the competence gap in accounting education.

As a final note, it is important to reiterate the researcher's personal view as an accounting graduate and an accounting educator. During her undergraduate degree, the researcher learnt a large amount of content knowledge and amassed many technical terms and theoretical knowledge in auditing courses. However, the researcher was not confident with her auditing competence and had no interest in an auditing profession. The researcher was not alone, none of the graduates at the time selected the auditing profession. Seventeen years have passed, yet the researcher still reads publications reporting the lack of competencies of accountants and auditors in Indonesia and other countries. Developing students' competencies that are relevant to the career demands in accounting and auditing professions has always been a research interest for the researcher.

Conducting this study has deepened the researcher's understanding about teaching, learning and outcomes. The most valuable insight the researcher gained from this study is awareness that: (1) what teachers do have a huge effect on what students do and (2) what students do will determine their competencies. Previously, the researcher thought students' prior background would more likely shape their learning. The findings of this study compel the researcher to better design appropriate teaching that can improve students' motivation to learn and approach to learning, which in turn accelerates their learning outcomes. Through this study, the researcher has come to view authentic alignment as the best means of promoting students' competence development. As one participant stated:

> I was not a good learner. I was weak in counting and accounting. I felt like I studied a lot harder than other students, yet my study results were just below average. However, the approach in this auditing course, which connects the expectation, implementation and assessment, has helped me to learn the real-world auditing practice and develop my competencies. (GI-2c)

An indirect outcome of this study is encouraging. After taking part in this study, nearly one-third of students selected an internship in public accounting firms and some of them are now junior auditors.

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APPENDICES

Appendix A. Approval

Appendix A.1 Human Research Ethics Approval

Curtin University

Office of Research and Development

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7863
Facsimile +61 8 9266 3793
Web research.curtin.edu.au

01-Aug-2018

Name: Paul De Lange
Department/School: CBS Learning and Teaching
Email: Paul.Delange@curtin.edu.au

Dear Paul De Lange

RE: Ethics Office approval
Approval number: HRE2018-0499

Thank you for submitting your application to the Human Research Ethics Office for the project **Integrating Competences in Accounting Education Through Constructive Alignment**.

Your application was reviewed through the Curtin University Low risk review process.

The review outcome is: **Approved**.

Your proposal meets the requirements described in the National Health and Medical Research Council's (NHMRC) *National Statement on Ethical Conduct in Human Research (2007)*.

Approval is granted for a period of one year from **01-Aug-2018** to **31-Jul-2019**. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Name	Role
Williams, John	Supervisor
De Lange, Paul	CI
Irafahmi, Diana Tien	Student

Approved documents:

Document

Standard conditions of approval

1. Research must be conducted according to the approved proposal
2. Report in a timely manner anything that might warrant review of ethical approval of the project including:

Appendix A.2 Institution Approval

MINISTRY OF RESEARCH, TECHNOLOGY AND HIGHER EDUCATION INDONESIA
UNIVERSITAS NEGERI MALANG (UM)
FACULTY OF ECONOMICS
Jalan Semarang 5, Malang 65145
Phone: 0341-552888
Website: www.um.ac.id

Number : 3.8.19 /UN32.4/TU/2018 August 3, 2018

Mrs. Diana Tien Irafahmi
PhD Student School of Education
Curtin University Australia

Dear Mrs Diana Tien Irafahmi,

On behalf of the Faculty of Economics of Universitas Negeri Malang (UM), I am writing to formally indicate our awareness of your research entitled " Integrating Competences into Accounting Education through Constructive Alignment". I grant you permission to conduct your research at our institution. Should you need any assistance, please feel free to contact me at +62341 552888 or email. dekan.fe@um.ac.id

Sincerely,

FE

Dr. H. Cipto Wardoyo, S.E.,M.Pd.,M.Si.,Ak.CA
Dean
Faculty of Economics
Universitas Negeri Malang (UM)

MINISTRY OF RESEARCH TECHNOLOGY AND HIGHER EDUCATION INDONESIA
UNIVERSITAS NEGERI MALANG
FACULTY OF ECONOMICS
Jalan Semarang 5 Malang, 65145
Phone: 0341-551312 Psw 275 Fax 0341-552 888
www. um.ac.id

3 August 2018

Mrs. Diana Tien Irafahmi
PhD Student
Curtin University Australia

Dear Mrs. Diana,

I am pleased to inform you that on behalf of the accounting department of Universitas Negeri Malang, I appreciate and approve your research "Integrating Competences into Accounting Education through Constructive Alignment" to be conducted in Accounting Department.

I have read the design of the research as well as the targeted participants. I hope that your research will enhance the quality of teaching and learning in the Accounting Department and support the mission of the university. I will provide any assistance necessary for the successful implementation of this study.

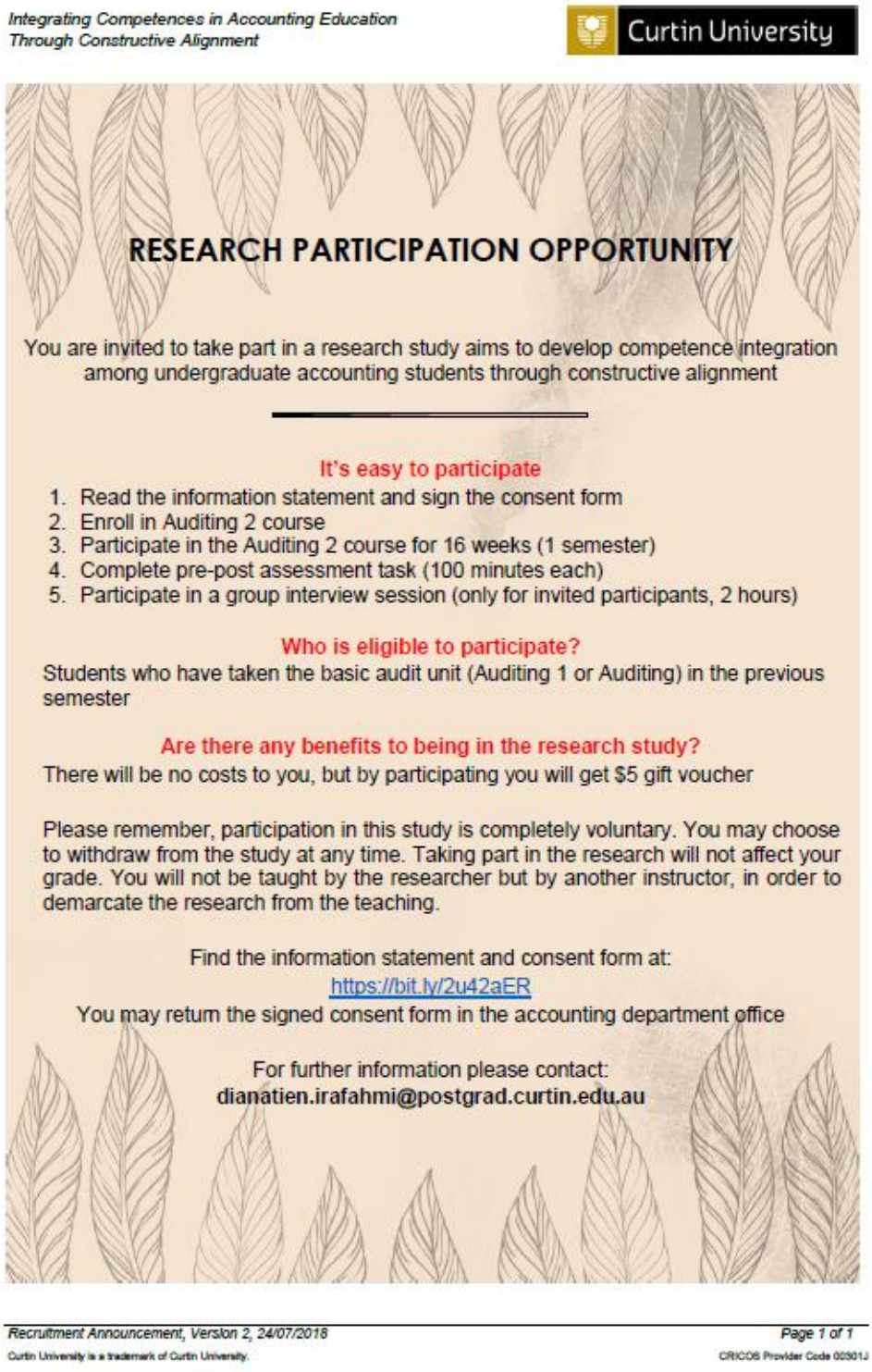
We look forward to working with you.

Sincerely,

Sulastri, S.Pd., M.SA.
Plt. Head of Accounting Department
Faculty of Economics
Universitas Negeri Malang

Appendix B. Participants Recruitment

Appendix B.1 Announcement to Recruit Participants



Integrating Competences in Accounting Education Through Constructive Alignment

Curtin University

RESEARCH PARTICIPATION OPPORTUNITY

You are invited to take part in a research study aims to develop competence integration among undergraduate accounting students through constructive alignment

It's easy to participate

1. Read the information statement and sign the consent form
2. Enroll in Auditing 2 course
3. Participate in the Auditing 2 course for 16 weeks (1 semester)
4. Complete pre-post assessment task (100 minutes each)
5. Participate in a group interview session (only for invited participants, 2 hours)

Who is eligible to participate?

Students who have taken the basic audit unit (Auditing 1 or Auditing) in the previous semester

Are there any benefits to being in the research study?

There will be no costs to you, but by participating you will get $5 gift voucher

Please remember, participation in this study is completely voluntary. You may choose to withdraw from the study at any time. Taking part in the research will not affect your grade. You will not be taught by the researcher but by another instructor, in order to demarcate the research from the teaching.

Find the information statement and consent form at:
https://bit.ly/2u42aER
You may return the signed consent form in the accounting department office

For further information please contact:
dianatien.irafahmi@postgrad.curtin.edu.au

Recruitment Announcement, Version 2, 24/07/2018 *Page 1 of 1*

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Appendix B.2 Information Statement and Consent Form (Instructor)

INFORMATION STATEMENT FOR THE INSTRUCTOR

The purpose of the study is to investigate the effectiveness of constructive alignment as a means to develop competence integration among undergraduate accounting students. We think that aligning learning outcomes, teaching and learning process and assessment, or constructive alignment, would develop students competencies. This study is important because accounting education in some jurisdictions is criticized for not equipping accounting students with the relevant competences required by employers. As the research setting is in auditing classroom, we would like to invite you to take part in the research as an auditing instructor. We believe your expertise in the field of auditing and your enthusiasm as an educator is very suitable to deliver learning within constructive alignment framework.

This study is being conducted by Diana Tien Irafahmi, a PhD student at Curtin University, under the supervision of Prof P John Williams (School of Education, Faculty of Humanities, Curtin University, ☏ +61 8 9266 5814, ✉: Pjohn.Williams@curtin.edu.au) and Prof Paul De Lange (Curtin Business School, ☏ +61 8 9266 9671, ✉: paul.delange@curtin.edu.au). The result of this study will be used by Diana Tien Irafahmi to obtain a Doctor of Philosophy at Curtin University and is funded by the University. There are no costs to you, other than your time, for being in this study. To appreciate your time for being in this study, we would like to provide you with all resources necessary for the implementation of the experiment, such as access to the paperback or digital literatures, syllabus, pre/post assessment tasks, and case study materials. We will also give you a $200 gift voucher to thank you for taking part in the study.

In this study, we will assign student into different group randomly. There will be approximately 4 auditing classrooms. You will teach 2 classes as control group and 2 classes as experiment group. The topics between the two groups are the same, however you will apply constructive alignment framework in the experimental group. We will make it clear to you about such framework before the beginning of the semester and discuss the implementation each week. To ensure that students will not be unfairly advantaged/disadvantaged, students in the control group will be swapped into experiment group during the second half of the semester. For the purpose of assessment, you will administer pre-assessment task in the first week, and post assessment task in the 9 and 16 week. We will keep the participants' responses to the pre/post assessment task confidential, which means no individual result will be shared with you. For the grading purpose, you will administer your own test.

There is no guarantee that you will receive any direct benefits from being in this study. By taking part you will help us to understand what helps and hinders the integration of competences. The results may be used in the future to improve the intervention. There are no foreseeable risks from this study. However, you might feel uncomfortable to teach students using a different framework. The researcher will discuss any problems associated with the implementation with you to overcome any concerns.

The data collected in this study will be identifiable in the first instance. This means that data collected will identify the participants, but subsequently de-identified during the data coding process. De-identified data will be used during the analysis and write up stage of the Thesis. Only the research team will have access to the data. Electronic data will be password-protected and hard copy data will be in locked storage. All data will be retained a minimum of seven years after completion of the study. At the completion of the seven years, all data will be destroyed.

The results of this study may be presented at conferences or published in professional journals. You will not be identified in any results that are published or presented. If you are interested in obtaining a summary of the results please contact the researchers by email.

Taking part in a study is voluntary. If you decide to take part in this study we will ask you to sign the consent form. Signing the consent indicates that you agree to be in the study. 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 and the consent form to keep.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2018-0499). 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 an instructor, 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.
Thank you for your time.

CONSENT FORM (INSTRUCTOR)

- I have read the English and/or the Bahasa version of the information statement and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part as an instructor of auditing course in this research project and assist the researcher with the data collection.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form.

Instructor Name

Instructor Signature

Date

Declaration by researcher: I have supplied an Information Letter and Consent Form to the instructor who has signed above, and believe that the instructor understands the purpose, extent and possible risks of her involvement in this project.

Researcher Name

Researcher Signature

Date

Appendix B.3 Information Statement and Consent Form (Constructive Alignment Group)

PARTICIPANT INFORMATION STATEMENT

We would like to invite you to take part in this study. The purpose of the study is to investigate the effectiveness of constructive alignment as a means to develop competence integration among undergraduate accounting students. We think that aligning learning outcomes, teaching and learning process and assessment, or constructive alignment, would develop students competences both in technical competence/subject specific competence and non-technical competence/generic skills. This study is important because accounting education in some jurisdictions is criticized for not equipping accounting students with the relevant competences required by employers.

This study is being conducted by Diana Tien Irafahmi, a PhD student at Curtin University, under the supervision of Prof P John Williams (School of Education, Faculty of Humanities, Curtin University, ☏ +61 8 9266 5814, ✉: Pjohn.Williams@curtin.edu.au) and Prof Paul De Lange (Curtin Business School, ☏ +61 8 9266 9671, ✉: paul.delange@curtin.edu.au). The result of this study will be used by Diana Tien Irafahmi to obtain a Doctor of Philosophy at Curtin University and is funded by the University. There are no costs to you, other than your time, for being in this study. You will be given a Rp 50.000,00 or $5 gift voucher for participating in each test.

In this study, we will assign you into different group randomly. You will not be able to know in which group you participate in, until the completion of the study. For the purpose of this study, we will ask you to do the following things:

1. Participate in the auditing II course for one semester. You will not be taught by the researcher but by another instructor.
2. Complete a pre-assessment task in your classroom: 100 minutes (week 1).
3. Complete a post-assessment task in your classroom: 100 minutes (week 9 and 16).

There is no guarantee that you will receive any benefits from being in this study. However possible benefit include the development of your technical and non-technical accounting competences. In the future, this research may provide information to enhance the quality of accounting education. There are no foreseeable risks from this study other than the time involved in completing the task. If you feel any discomfort, you are free to cease completing the pre and post assessment task at any stage.

The data collected in this study will be identifiable in the first instance. This means that data collected will identify the participants, but subsequently de-identified during the data coding process. De-identified data will be used during the analysis and write up stage of the Thesis. Only the research team will have access to the data. Electronic data will be password-protected and hard copy data will be in locked storage. All data will be retained a minimum of seven years after completion of the study. At the completion of the seven years, all data will be destroyed.

The results of this study may be presented at conferences or published in professional journals. You will not be identified in any results that are published or presented. If you are interested in obtaining a summary of the results please contact the researchers by email.

Taking part in a research project is voluntary. If you decide to take part and then change your mind, you can withdraw from the study at any time. If you choose not to take part or start and then stop the study, it will not affect your course grade. If you decide to take part in this study

we will ask you to sign the consent form. Signing the consent indicates that you agree to be in the study. 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 and the consent form to keep.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2018-0499). 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. Thank you for your time.

CONSENT FORM

- I have read the English and/or the Bahasa version of the information statement and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part in this research project.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form.

Participant Name

Participant Signature

Date

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name

Researcher Signature

Date

Appendix B.4 Information Statement and Consent Form for Interview (Constructive Alignment Group)

PARTICIPANT INFORMATION STATEMENT

We would like to invite you to take part in this study. The purpose of the study is to investigate the effectiveness of constructive alignment as a means to develop competence integration among undergraduate accounting students. We think that aligning learning outcomes, teaching and learning process and assessment, or constructive alignment, would develop students competences both in technical competence/subject specific competence and non-technical competence/generic skills. This study is important because accounting education in some jurisdictions is criticized for not equipping accounting students with the relevant competences required by employers.

This study is being conducted by Diana Tien Irafahmi, a PhD student at Curtin University, under the supervision of Prof P John Williams (School of Education, Faculty of Humanities, Curtin University, ☏ +61 8 9266 5814, ✉: Pjohn.Williams@curtin.edu.au) and Prof Paul De Lange (Curtin Business School, ☏ +61 8 9266 9671, ✉: paul.delange@curtin.edu.au). The result of this study will be used by Diana Tien Irafahmi to obtain a Doctor of Philosophy at Curtin University and is funded by the University. There are no costs to you, other than your time, for being in this study. You will be given a Rp 50.000,00 or $5 gift voucher for participating.

You have been invited to take part because of your participation in a constructively aligned auditing course. Your views and opinions will help us to better interpret the findings of the experiment stage. We will be interviewing 12 students with different types of learning outcomes. The interview is in the form of group interview. We will ask questions related to your experience studying in a constructively aligned course. The interview will take place at a mutually convenient location and will last up to two hours. We will record the interview using a digital audio recording to capture all the information discussed during the interview. After the interview, we will make a full written copy of the recording.

There is no guarantee that you will receive any direct benefits from being in this study. By taking part you will help us to understand what helps and hinders the integration of competences. In the future, this research may provide information to enhance the quality of accounting education. The risk might be the loss of time involved in participating in the group interview. In addition, you may feel discomfort during the interview. However, the topic of the interview is a general topic related to your experience studying in a constructively aligned course, and thus is not a sensitive issue. If you feel discomfort you are free to cease the interview at any stage.

The data collected in this study will be identifiable in the first instance. This means that data collected will identify the participants, but subsequently de-identified during the data coding process. De-identified data will be used during the analysis and write up stage of the Thesis. Only the research team will have access to the data. Electronic data will be password-protected and hard copy data will be in locked storage. All data will be retained a minimum of seven years after completion of the study. At the completion of the seven years, all data will be destroyed.

The results of this study may be presented at conferences or published in professional journals. You will not be identified in any results that are published or presented. If you are interested in obtaining a summary of the results please contact the researchers by email.

Taking part in a study 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 decide to take part and then change your mind, you can withdraw from the project at any time. If you choose not to take part or start and then stop the study, it will not affect your course grade. If you decide to take part in this study we will ask you to sign the consent form. Signing the consent indicates that you agree to be in the study. 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 and the consent form to keep.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2018-0499). 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. Thank you for your time.

CONSENT FORM

- I have read the English and/or the Bahasa version of the information statement and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part in this research project.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form.

Participant Name

Participant Signature

Date

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name

Researcher Signature

Date

Appendix B.5 Information Statement and Consent Form for Interview (Non-constructive Alignment Group)

PARTICIPANT INFORMATION STATEMENT

We would like to invite you to take part in this study. The purpose of the study is to investigate the effectiveness of constructive alignment as a means to develop competence integration among undergraduate accounting students. We think that aligning learning outcomes, teaching and learning process and assessment, or constructive alignment, would develop students competences both in technical competence/subject specific competence and non-technical competence/generic skills. This study is important because accounting education in some jurisdictions is criticized for not equipping accounting students with the relevant competences required by employers.

This study is being conducted by Diana Tien Irafahmi, a PhD student at Curtin University, under the supervision of Prof P John Williams (School of Education, Faculty of Humanities, Curtin University, ☏ +61 8 9266 5814, ✉: Pjohn.Williams@curtin.edu.au) and Prof Paul De Lange (Curtin Business School, ☏ +61 8 9266 9671, ✉: paul.delange@curtin.edu.au). The result of this study will be used by Diana Tien Irafahmi to obtain a Doctor of Philosophy at Curtin University and is funded by the University. There are no costs to you, other than your time, for being in this study.

You have been invited to take part because of your participation in a constructively aligned auditing course. Your views and opinions will help us to better interpret the findings of the experiment stage. We expect the numbers of participants per group are 4 students. The interview is in the form of online group interview through WhatsApp and will last up to two hours. The use of WhatssApp allows the researcher to record all information discussed during the interview. We will ask questions related to your experience studying in the Audit 2 course.

There is no guarantee that you will receive any direct benefits from being in this study. By taking part you will help us to understand what helps and hinders the integration of competences. In the future, this research may provide information to enhance the quality of accounting education. The risk might be the loss of time involved in participating in the group interview. In addition, you may feel discomfort during the interview. However, the topic of the interview is a general topic related to your experience studying in a constructively aligned course, and thus is not a sensitive issue. If you feel discomfort you are free to cease the interview at any stage.

The data collected in this study will be identifiable in the first instance. This means that data collected will identify the participants, but subsequently de-identified during the data coding process. De-identified data will be used during the analysis and write up stage of the Thesis. Only the research team will have access to the data. Electronic data will be password-protected and hard copy data will be in locked storage. All data will be retained a minimum of seven years after completion of the study. At the completion of the seven years, all data will be destroyed.

The results of this study may be presented at conferences or published in professional journals. You will not be identified in any results that are published or presented. If you are interested in obtaining a summary of the results please contact the researchers by email.

Taking part in a study 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 decide to take part and then change your mind, you can withdraw from the project at any time. If you choose not to take part or start and then stop the

study, it will not affect your course grade. If you decide to take part in this study, we will ask you to sign the consent form. Signing the consent indicates that you agree to be in the study. 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 and the consent form to keep.

Curtin University Human Research Ethics Committee (HREC) has approved this study (HRE2018-0499). 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.
Thank you for your time,

CONSENT FORM

- I have read the English and/or the Bahasa version of the information statement and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this project.
- I voluntarily consent to take part in this research project.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this project has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research (2007).
- I understand I will receive a copy of this Information Statement and Consent Form.

Participant Name

Participant Signature

Date

Declaration by researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this project.

Researcher Name

Researcher Signature

Date

Appendix C. Instruments

Appendix C.1 Auditing Test 1 "Shinee Inc."

Source	**:**	This auditing test is a modified version of the case study 'Sprandel, Inc.: Electronic Workpapers, Audit Documentation, and Closing Review Notes in the Audit of Accounts Receivable' (Andiola, Lambert, Lynch, 2018)
Subject Matter	:	Audit of Accounts Receivable
Competence Addressed	:	Audit, information technology, written communication, professional scepticism and judgement, ethics, and teamwork
Supporting documents	:	a. 1 page 'Read Me First Procedures' b. 2 pages case materials c. Excel file: Workpapers; d. Firm guidance: • 3 pages account receivable audit program, • 1 page sample size guidance, • 1 page tests of details-misstatements; e. Audit evidence: • 6 pages account receivable detailed listing, • 3 pages write-off detailed listing, • 1 page early and late cut-off detailed listing, • 1 page assigned client accounts, • Excel file for the audit evidence; f. New/additional audit evidence: • 16 invoices, • 14 write-off memo g. Glossary h. 2 pages Audit memorandum answer sheet; i. 1 page ethics answer sheet. j. 1 USB drive for each audit team
Time Allocation	:	95 minutes

Case Materials
Shinee Inc.

(This is the English version. Participants received the Bahasa Indonesia version for the test)

Shinee, Inc. is a publicly held, mid-sized manufacturer that produce plastic bottles in various shapes. Acurate Fact has audited Shinee Inc.'s financial statements for the last four years. As a staff auditor with Accurate Fact, you have been assigned to the 12/31/20X3 fiscal year-end audit. One of the areas you are assigned to work on is accounts receivable. The audit of accounts receivable for Shinee primarily involves two accounts: (1) the Gross Accounts Receivable account and (2) the Allowance for Doubtful Accounts (hereafter, "the Allowance"), which together make up the Net Accounts Receivable balance reported on the balance sheet at 12/31/20X3. Two assertions pose the highest inherent risk for these account

balances: existence and valuation. During the team planning meeting, the risk of material misstatement for accounts receivable was assessed as moderate based on prior year audit work and the audit team noting no significant changes in Shinee's operations in the current year. Based on this level of risk, the team assessed tolerable misstatement for accounts receivable to be $750,000, meaning any misstatements greater than $750,000 require the client to book an adjusting entry.

Case Requirements

Your audit manager, Bill Davis, has left 5 review notes to address in the accounts receivable workpapers. Ultimately, your goal is to appropriately close the review notes to complete the accounts receivable audit work for this fiscal year. In completing this task, you need to evaluate whether the results of your work provide sufficient and appropriate audit evidence regarding the financial statement assertions being audited. If you find other issues or exceptions that you believe may change your conclusion, be sure to note your concern to your audit manager in your memo.

Deliverables

Your deliverables will consist of three parts:

Part 1) Completed Workpaper Excel File –

Each review note should be clearly addressed or closed in the Excel file. For example, you may write, "RN CLOSED – We fixed the noted spelling error" in the comment box. In other instances, you may write "RN CLOSED – See new tickmarks X and Y for additional procedures performed and noted issues we uncovered." Finally, you should consider whether the conclusion on each workpaper is still accurate or if it needs to be modified in light of any issues or exceptions you find.

Part 2) Completed Memo

Write a memo to the audit manager (your instructor) in the format provided and include discussion of the following: Identification of issues noted in revising and completing the workpapers, any suggested next audit step(s), whether the conclusion related to the workpaper requires modification and responses to these Critical-Thinking Questions:

Review Note 3 required you to perform procedures on accounts receivable items selected for testing the existence assertion. Refer to Standar Professional Akuntan Publik (SPAP) (Professional Standard for Public Accountants), what is the recommended procedure for verifying the existence assertion of accounts receivable? Explain why this procedure provides more reliable audit evidence than other procedures. Each sample item you tested had varying evidence to corroborate existence. Were you more sceptical of evidence you were able to obtain for some of the sample items versus others? Why

Part 3) **Ethics**

Please provide examples of ethical issues that might occurred in the audit of financial statements. Please also explain your recommendation to reduce the ethical issues identified in your example using the relevant auditing standards and code of ethics.

Appendix C.2 Auditing Test 1 "Infinite Manufacturing"

Source	:	This auditing test is a modified version of the case study 'Old Main Manufacturing: The Case of Unrecorded Sales Discounts' (Peaden & Stephens, 2013)
Subject Matter	:	Audit of sales discounts (revenue cycle)
Competence Addressed	:	Audit, information technology, written communication, professional scepticism and judgement, ethics, and teamwork
Supporting documents	:	a. 2 pages case materials; b. 1 page audit program c. 61 invoices; d. 1 page audit memorandum answer sheet; e. 1 page ethics answer sheet; f. Excel file: sales journals and cash receipt journals; g. Excel file: workpaper 2-1 (misstatement) and workpaper 2-2 (adjusting journal entries) h. 1 USB drive for each audit team
Time Allocation	:	95 minutes

Case Materials

Infinite Manufacturing

(This is the English version. Participants received the Bahasa Indonesia version for the test)

You are a junior auditor in ABC public accountant firm. You are currently on an engagement team that is auditing the financial statements of Infinite Manufacturing, a ship parts manufacturer headquartered in Alaska.

Part A

Prior to the appointment of ABC as the auditor of Infinite Manufacturing for the 2010 financial year, some preliminary analysis has identified the following situations:

One of the accountant intended to be part of the 2010 audit team owns shares in Infinite Manufacturing.

Required:

Using your knowledge of code of ethics for professional accountants, do the following:

1. Identify and explain the potential type of threat to ABC's independence (your answer should take into consideration the independence of individuals as well as the firm as a whole)
2. Explain the action ABC should take to reduce the potential threat identified in 1 above

Note: You may wish to present your answer to 1 and 2 in the form of a table, as follows:

1. Type of Threat and Explanation	2. Action to Reduce Threat

PART B

Assume that the issue of independence on audit engagement has been solved, you continue your work to audit Infinite's cash. As you are wrapping up your audit of Infinite's cash, you receive the following email from Karen, your supervisor, requesting that you perform the audit of Infinite's sales discounts account:

I am writing regarding our ongoing audit of Infinite Manufacturing. During preliminary analytical review of Infinite's financial statements, we discovered that the sales discounts as a percentage of sales ratio has been declining over time without an adequate explanation from management. In addition, the internal control walk-through has suggested that controls over the recording of cash receipts are relatively weak. Therefore, part of the audit program this year will be to perform substantive tests of sales discounts. I would like you to perform the testing of this account as soon as you complete your audit of cash.

Please prepare a draft audit program that outlines the steps that you need to take to complete the audit of sales discounts. Posted online is a spreadsheet that includes work papers from last year's audit of sales discounts. Please use this template for your current year audit. Feel free to add or delete any extra lines, and make sure to edit the notes to describe the process you used to test the account. You will find the work papers, client's sales journal and cash receipts journal, and the client's invoices online.

Remember to initial and date the audit program as you complete each step. It is essential that you complete this portion of the audit in a timely manner so we don't get behind.

Thanks,
Karen

You realize that your audit of cash is nearly complete, and that you will need to begin the audit of sales discounts later today.

Instructions and Deliverables

1. Follow the audit program to test the sales discounts account.
2. An Excel file that includes the prior-year work papers, Infinite's cash receipts journal and sales journal, and the invoices necessary for completing this audit of sales discounts is available (see attachment).
3. Complete the work papers provided by Karen, including any misstatements found in your testing as well as proposed adjusting journal entries to correct known misstatements.
4. Write a short memo to your supervisor, Karen, containing the following information:
    a. Summarize your findings. How many misstatements did you find (if any)?
    b. Which management assertion(s) are you concerned about for the sales discounts account? Explain whether there are any assertions relating to other financial statement accounts that may be impacted by this/these misstatement(s).
    c. Consider SPAP SA 530 (Auditing Standard), Audit Sampling. What other factors should be considered before coming to a final judgement regarding the fairness of the sales discount account? Based upon your testing, are you confident that the sales discount account is fairly stated? Explain.
    d. What course of action should you take if you believe the sales discount account is not fairly stated based on the substantive testing you performed?
5. Deliverables: Completed audit program, work papers, and memo.

Appendix C.3 Self-assessed Competence Questionnaire

Time Allocation	:	5 minutes
Instructions	:	Please respond to each statement as accurately as possible by placing a tick (v) in the appropriate column (Strongly Agree = very competent, Agree = competent, Disagree = incompetent, Strongly Disagree = very incompetent). There is no right or wrong response. This research will only be useful if it is accurate. Thank you.
Name	:	
Class	:	
Age	:	
Gender	:	

No.	Competence Area	Strongly Agree	Agree	Disagree	Strongly Disagree
	Audit				
1	I am able to describe the objectives and stages involved in performing an audit of financial statements				
2	I am able to apply relevant auditing standards and applicable laws and regulations to an audit of financial statements				
	Information technology				
3	I am able to explain how information technology contributes to data analysis and decision making in audit engangements.				
4	I am able to use information technology (e.g., MS Excel) to support decision making in audits				
	Communication				
5	I am able to communicate effectively in written form to produce professional audit documents				
	Teamwork				
6	I am able to display effective teamwork when performing an audit of financial statements				
	Professional scepticism and judgement				
7	I am able to apply professional scepticism when performing an audit of financial statements.				

8	I am able to apply professional judgement when performing an audit of financial statements				
	Ethics				
9	I am able to identify ethical issues in an audit of financial statements				
10	I am able to apply the audit standard and code of ethics to resolve ethical dilemmas				

Appendix C.4 Interview Protocol

Aspect	Semi-structured interview			
	Early version (pilot tested)	**Phase 1 Group interview 1 (experiment Group)**	**Phase 2 Group interview 2 (experiment group)**	**Phase 2 Group interview 3 (control group)**
Clarity of the ILO (Intended Learning Outcomes)	• What is your understanding of the ILO in the auditing course?	• What is your understanding of the ILO in the auditing course?	• What is your understanding of the ILO in the auditing course?	
Teaching learning alignment	• Please explain the teaching/ learning activities in the auditing course • How well did the teaching/ learning activities in that course help you to achieve the ILO?	• Please explain the teaching/ learning activities in the auditing course • How well did the teaching/ learning activities in that course help you to achieve the ILO?	• Please explain the teaching/ learning activities in the auditing course • How well did the teaching/ learning activities in that course help you to achieve the ILO?	
Assessment alignment	• Please explain the assessment tasks in the auditing course • How well did the assessment tasks in that course help you to achieve the ILO?	• Please explain the assessment tasks in the auditing course • How well did the assessment tasks in that course help you to achieve the ILO?	• Please explain the assessment tasks in the auditing course • How well did the assessment tasks in that course help you to achieve the ILO?	
Feedback effective-ness	• Please explain the feedback that you get in the auditing course • How effective was the feedback given in supporting your learning?	• Please explain the feedback that you get in the auditing course • How effective was the feedback given in supporting your learning?	• Please explain the feedback that you get in the auditing course • How effective was the feedback given in supporting your learning?	
Perceived learning outcomes	• In your opinion, are you a naturally effective learner? • Which ILO do you think were not fully	• In your opinion, are you a naturally effective learner? • Which ILO do you think were not fully	• In your opinion, are you a naturally effective learner? • Which ILO do you think were not fully	

	supported in the auditing course? Please explain. • In terms of technical and non-technical competences, please rank the competences that you felt were fully supported and developed in the course • Can you think any possible ways to improve the teaching/learning activities and the assessment so that you can more effectively achieve the desired learning outcomes?	supported in the auditing course? Please explain. • In terms of technical and non-technical competences, please rank the competences that you felt were fully supported and developed in the course • Can you think any possible ways to improve the teaching/learning activities and the assessment so that you can more effectively achieve the desired learning outcomes?	supported in the auditing course? Please explain. • In terms of technical and non-technical competences, please rank the competences that you felt were fully supported and developed in the course • Can you think any possible ways to improve the teaching/learning activities and the assessment so that you can more effectively achieve the desired learning outcomes?	
Follow up questions		• Which aspect of the constructive alignment intervention that significantly impact the development of your competences? • Why did your improvement of ethics competence not significantly different from that of the non-constructive alignment intervention group	• Which aspect of the constructive alignment intervention that significantly impact the development of your competences? • Why did your improvement of ethics competence not significantly different from that of the non-constructive alignment intervention group	• What did you do after we stop the intervention in the second half semester? • Please tell me your learning experience in each competence both in Phase 1 and Phase 2 • Which competence do you think increase significantly in Phase 1 and decrease

		• How did working in a team help you to acquire an integrated competence?	• How did working in a team help you to acquire an integrated competence?	in Phase 2? Why?

Appendix D. Scoring Rubric

Shinee Inc.

1. Audit (Perform auditing procedures to audit account receivable)

Category	Basis for Grading			Points
	Accurate 20	Partially Accurate 5 – <20	Inaccurate < 5	
Review Notes 1				/20
Review Notes 2				/20
Review Notes 3				/20
Review Notes 4				/20
Review Notes 5				/20
Total				/100

2. Information technology (use Ms Excel to make electronic work paper)

Category	Basis for Grading			Points
	Accurate 20	Partially Accurate 5 – <20	Inaccurate < 5	
Review Notes 1				/20
Review Notes 2				/20
Review Notes 3				/20
Review Notes 4				/20
Review Notes 5				/20
Total				/100

3. Written Communication (Write a professional audit memorandum)

Criteria	Marking				
	Poor	Below average	Average	Above average	Excellent
Organization / Coherent					
Includes an appropriate title or addressed to the appropriate audience	1	2	3	4	5
Introduction paragraph includes a thesis statement to inform the reader of overall purpose of the document	1	2	3	4	5
Unified paragraphs with appropriate transitions and connectives to enhance reader comprehension	1	2	3	4	5
Consistent use of appropriate format	1	2	3	4	5
Includes an appropriate closing paragraph or summary comments	1	2	3	4	5
Average score of organization					
Development					
Organization of ideas and flow of the document shows clarity of thought to support the thesis statement	1	2	3	4	5
Includes appropriate details and definitions to enhance reader understanding given the audience	1	2	3	4	5
Written in a direct, active style	1	2	3	4	5

Demonstrates a sense of professionalism; uses an effective business/auditing vocabulary	1	2	3	4	5
Average score of development					
Expression / Clarity					
Language clearly and effectively communicates ideas (concise: no unnecessary repetition or wordiness)	1	2	3	4	5
Proper use of language structure	1	2	3	4	5
Word usage is appropriate to avoid ambiguity	1	2	3	4	5
Proper use of punctuation; commas, periods, etc	1	2	3	4	5
Spelling; free of errors	1	2	3	4	5
Average score of expression					
Content					
Content is on topic	1	2	3	4	5
Content is not misleading; not providing unethical advise	1	2	3	4	5
Demonstrates an understanding of auditing procedures	1	2	3	4	5
Presents an insightful and thorough analysis of the issues	1	2	3	4	5
Average score of content					
Maximum score 20 points					
Conversion to 100 points					

4. Professional Scepticism and Professional Judgement

Category	**Basis for Grading**			**Points**
	Accurate 100	**Partially Accurate 20 - <100**	**Inaccurate < 20**	
Evidence assessment: Detection of misstatement (professional scepticism)				/100
Generation of explanation for evaluating audit evidence and making decision (professional judgement)				/100
Average				/100

5. Ethics Competence

Category	**Basis for Grading**			**Points**
	Accurate 100	**Partially Accurate 20 - <100**	**Inaccurate < 20**	
Identification of ethical issue				/100
Application of standards and code of ethics to resolve ethical issue				/100
Average				/100

Infinite Manufacturing

1. Audit (perform auditing procedures to audit sales discount account)

Category	Basis for Grading			Points
	Accurate 100	**Partially Accurate 20 – <100**	**Inaccurate < 20**	
Audit program				/100
Result of audit program				/100
Average				/100

2. Information technology (use Ms Excel to make electronic work paper)

Category	Basis for Grading			Points
	Accurate 100	**Partially Accurate 20 – <100**	**Inaccurate < 20**	
Notes Workpaper 2-1				/100
Table unrecorded discount workpaper 2-1				/100
Adjusting entries workpaper 2-2				/100
Average				/100

3. Written communication (Write a professional audit memorandum)

Criteria	Marking				
	Poor	**Below average**	**Average**	**Above average**	**Excellent**
Organization / Coherent					
Includes an appropriate title or addressed to the appropriate audience	1	2	3	4	5
Introduction paragraph includes a thesis statement to inform the reader of overall purpose of the document	1	2	3	4	5
Unified paragraphs with appropriate transitions and connectives to enhance reader comprehension	1	2	3	4	5
Consistent use of appropriate format	1	2	3	4	5
Includes an appropriate closing paragraph or summary comments	1	2	3	4	5
Average score of organization					
Development					
Organization of ideas and flow of the document shows clarity of thought to support the thesis statement	1	2	3	4	5
Includes appropriate details and definitions to enhance reader understanding given the audience	1	2	3	4	5
Written in a direct, active style	1	2	3	4	5

Demonstrates a sense of professionalism; uses an effective business/auditing vocabulary	1	2	3	4	5
Average score of development					
Expression / Clarity					
Language clearly and effectively communicates ideas (concise: no unnecessary repetition or wordiness)	1	2	3	4	5
Proper use of language structure	1	2	3	4	5
Word usage is appropriate to avoid ambiguity	1	2	3	4	5
Proper use of punctuation; commas, periods, etc	1	2	3	4	5
Spelling; free of errors	1	2	3	4	5
Average score of expression					
Content					
Content is on topic	1	2	3	4	5
Content is not misleading; not providing unethical advise	1	2	3	4	5
Demonstrates an understanding of auditing procedures	1	2	3	4	5
Presents an insightful and thorough analysis of the issues	1	2	3	4	5
Average score of content					
Maximum score 20 points					
Conversion to 100 points					

4. Professional Scepticism and Professional Judgement

Category	**Basis for Grading**			**Points**
	Accurate 100	**Partially Accurate 20 - <100**	**Inaccurate < 20**	
Evidence assessment: Detection of misstatement (professional scepticism)				/100
Generation of explanation for evaluating audit evidence and making decision (professional judgement)				/100
Average				/100

5. Ethics Competence

Category	**Basis for Grading**			**Points**
	Accurate 100	**Partially Accurate 20 - <100**	**Inaccurate < 20**	
Identification of ethical issue				/100
Application of standards and code of ethics to resolve ethical issue				/100
Average				/100

Appendix E. Syllabus

Appendix E.1 Syllabus (Constructive Alignment Group)

NAKT 613 Auditing 2
Course Syllabus 2018

Title of Course : Auditing 2
Course Code : NAKT 613
Credit Hours : 3 credits
Prerequisite : Auditing 1 (compulsory)

Course Description
This course builds on the knowledge base from Auditing 1, to provide students with an in-depth understanding of advanced auditing process. The emphasis of this course is on the practical application of audit procedures to ensure that financial statements are fairly presented. Students will apply auditing procedures to balance sheet account and income statement account. Students will also learn how to use non-specialised audit software (Ms Excel) to help analyse data in audit engagements.

Course Intended Learning Outcomes (ILO)
Upon completion of this course, student should be able to demonstrate an integrated competence (technical and non-technical competence) to perform an audit of financial statements.

ILO 1. Audit Competence:
- Describe the objectives and stages involved in performing an audit of financial statements.
- Apply relevant auditing standards and applicable laws and regulations to an audit of financial statements.

ILO 2. Information Technology Competence
- Explain how information technology contributes to data analysis and decision-making in audit engagements.
- Use information technology (e.g., MS Excel) to support decision-making in audits.

ILO 3. Communication competence
- Communicate effectively in written form to produce professional audit documents.
- Communicate effectively in oral form when presenting, discussing and reporting in formal and informal audit situations.

ILO 4. Professional Scepticism and Professional Judgement
- Apply professional scepticism when performing an audit of financial statements.
- Apply professional judgement when performing an audit of financial statements.

ILO 5. Ethics Competence
- Identify ethical issues in an audit of financial statements.
- Apply relevant audit standard and code of ethics to resolve ethical dilemmas.

ILO 6. Teamwork Competence
- Display cooperation when performing an audit of financial statements.

Teaching and Learning activities
To promote the development of competence integration, case-based learning is selected as the main teaching and learning activities. Students learn the whole stages involved in performing an audit of financial statements through the use of case materials to apply theory into audit practice. Case-based learning may require a lot of time. Before the class, students have to: (1) Read the syllabus; (2) Learn the auditing concept in the auditing textbook; (3) Learn the case study materials.

Assessment
Students are assessed on how well students demonstrate competencies (audit, information technology, communication, professional scepticism and judgement, ethics, teamwork) in an audit of financial statements.

Textbooks Required
Moroney, R., Campbell, F., Hamilton, J. (2014). *Auditing: A Practical Approach* (2nd Ed.). John Wiley & Sons Australia, Ltd

Leung, P., Coram, P., Cooper, B.J., Richardson, P. (2015). *Modern Auditing & Assurance Services* (6th Ed.). John Wiley & Sons Australia, Ltd

Arens, A.A., Elder, R. J., Beasley, M.S. (2012) *Auditing and Assurance Services* (14th Ed). Pearson

Indonesian Institute of Certified Public Accountant. Public Accountant Professional Standard & Code of Ethics for Professional Accountants. *www.iapi.or.id*

Course Sequence

Week	Topic	ILO Addressed	Teaching and Learning Activities	Assessment
1	Pre test			
2	Introduction to Auditing 2	ILO 1	- Discuss the syllabus of the course (ILO, TLA and AT) - Discuss auditing and assurance environment - Discuss audit planning	

3	Testing of controls	ILO 1 – 6	- Discuss the nature, timing and extent of testing of controls
			- Discuss ethical issues
			- Work in teams to complete 'case study Cloud 9: testing of controls'
			  - apply auditing standard to perform testing of controls
			  - use Ms Excel to complete workpapers
			  - document test of control in a working paper
			  - apply professional scepticism and judgement
			  - cooperate with team member to perform testing of controls
				Students are assessed on how well students demonstrate their competence to complete case study Cloud 9: testing of control

4	Designing substantive procedures	ILO 1 – 6	- Discuss the nature, timing and extent of substantive audit procedures - Discuss the use of IT to perform substantive procedures - Discuss ethical issue in performing substantive procedures	Students are assessed on how well students demonstrate their competence to complete case study 'Rosie's

			- Work in teams to complete 'case study: 'Rosie's East End Restaurant'
			  - apply auditing standard to perform substantive procedures
			  - document substantive audit procedures in the audit program
			  - communicate the observation and opinion
			  - apply professional scepticism and judgement
			  - cooperate with team member to perform substantive procedures
				East End Restaurant'

5	Substantive testing of cash & accounts receivables	ILO 1, 3, 4, 5, 6	- Discuss the objectives and process in auditing cash and accounts receivables
			- Discuss ethical issues
			- Work in teams to complete case study 'Cloud 9': substantive testing of cash and accounts receivables
			  - apply auditing standard to design substantive testing
			  - document substantive testing in the audit program
			  - communicate the result and process of substantive testing
			  - apply professional scepticism and judgement
			  - cooperate with team member to perform substantive testing
				Students are assessed on how well students demonstrate their competence to complete case study Cloud 9: substantive testing of cash and accounts receivables

6
7
	Substantive testing of inventory	ILO 1, 3, 4, 5, 6	- Discuss the objectives and process in auditing inventory
			- Discuss ethical issues
			- Work in teams to complete case study 'Key Considerations in the Audit of Inventory'
			  - apply auditing standard to perform substantive testing of inventory
			  - document substantive testing of inventory in the audit program
			  - communicate the process and result of substantive testing
			  - apply professional judgement and scepticism
			  - cooperate with team member to perform
				Students are assessed on how well students demonstrate their competence to complete case study 'Key Considerations in the Audit of Inventory'

			substantive testing of inventory	
8	**Post-test 1 (Shinee Inc.)**			

1
2
3
	Substantive testing of Property, Plant, Equipment (PPE)	ILO 1 – 6	- Discuss the objectives and process in auditing PPE
			- Discuss ethical issues
			- Work in teams to complete case study 'Shoe Zoo'
			  - apply auditing standard to perform substantive testing of PPE
			  - use Ms Excel to create electronic work papers
			  - communicate substantive testing of PPE with other audit team members through the use of tick mark and tick mark explanation
			  - communicate orally through client interviews
			  - apply professional judgement and scepticism
			  - cooperate with team member to perform substantive testing of PPE
				Students are assessed on how well students demonstrate their competence to complete case study 'Shoe Zoo'

4
5
	Substantive testing of revenue	ILO 1 – 6	- Discuss the objectives and process in auditing revenue
			- Discuss ethical issues
			- Work in teams to complete 'case study Vouch and Trace
			  - apply auditing standard to perform substantive testing of revenue
			  - use Ms Excel to create electronic work papers
			  - communicate substantive testing of revenue through writing memorandum
			  - apply professional judgement and scepticism
			  - cooperate with team member to perform substantive testing of revenue
				Students are assessed on how well students demonstrate their competence to complete case study 'Vouch and Trace'

6	Completing and reporting on the audit	ILO 1, 5	- discuss the process in completing and reporting on the audit - discuss ethical issues	
7	**Post Test 2 (Infinite Manufacturing)**			

Appendix E.2 Syllabus (Non-constructive Alignment Group)

NAKT 613 Auditing 2
Course Syllabus 2018

Title of Course : Auditing 2
Course Code : NAKT 613
Credit Hours : 3 credits
Prerequisite : Auditing 1 (compulsory)

Course Description

This course builds on the knowledge base from Auditing 1, to provide students with an in-depth understanding of advanced auditing process. The emphasis of this course is on the practical application of audit procedures to ensure that financial statements are fairly presented. Students will apply auditing procedures to balance sheet account and income statement account.

Course Intended Learning Outcomes (ILO)

Upon completion of this course, student should be able to demonstrate an integrated competence (technical and non-technical competence) to perform an audit of financial statements.

ILO 1. Audit Competence:

- Describe the objectives and stages involved in performing an audit of financial statements.
- Apply relevant auditing standards and applicable laws and regulations to an audit of financial statements.

ILO 2. Information Technology Competence

- Explain how information technology contributes to data analysis and decision-making in audit engagements.
- Use information technology (e.g., MS Excel) to support decision-making in audits.

ILO 3. Communication Competence

- Communicate effectively in written form to produce professional audit documents.
- Communicate effectively in oral form when presenting, discussing and reporting in formal and informal audit situations.

ILO 4. Professional Scepticism and Professional Judgement

- Apply professional judgement when performing an audit of financial statements.
- Apply professional scepticism when performing an audit of financial statements.

ILO 5. Ethics Competence

- Identify ethical issues in an audit of financial statements.
- Apply relevant audit standard and code of ethics to resolve ethical dilemmas.

ILO 6. Teamwork Competence

- Display cooperation when performing an audit of financial statements.

Teaching and Learning activities

Group presentation is the main teaching and learning activities. Students will be divided into several groups. Each group will make presentation on the selected topic based on the sequence in the textbook. Other students has to actively participate in the discussion of the topic.

Assessment

Students are assessed on their presentation performance and their participation in the discussion.

Textbooks Required

Moroney, R., Campbell, F., Hamilton, J. (2014). *Auditing: A Practical Approach* (2nd Ed.). John Wiley & Sons Australia, Ltd

Leung, P., Coram, P., Cooper, B.J., Richardson, P. (2015). *Modern Auditing & Assurance Services* (6th Ed.). John Wiley & Sons Australia, Ltd

Arens, A.A., Elder, R. J., Beasley, M.S. (2012) *Auditing and Assurance Services* (14th Ed). Pearson

Indonesian Institute of Certified Public Accountant. Public Accountant Professional Standard & Code of Ethics for Professional Accountants. *www.iapi.or.id*

Course Sequence

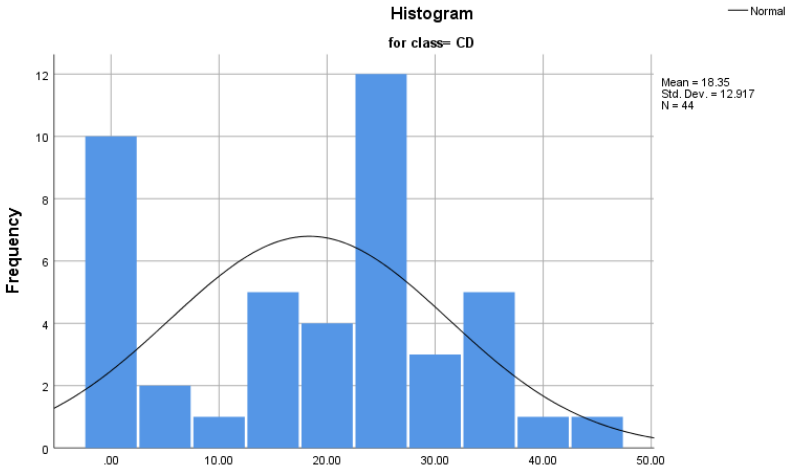
Week	Topic	Teaching learning activities
1	Pre-test	
2	Introduction to Auditing 2 (auditing and assurance environment, audit planning)	Lecturing
3	Testing of controls	Group presentation
4	Designing substantive procedures	Group presentation
5	Substantive testing of cash and accounts receivables	Group presentation
6	Substantive testing of accounts receivables	Group presentation
7	Substantive testing of inventory	Group presentation
8	Post Test 1	
1	Substantive testing of Property, Plant, Equipment (PPE)	Lecturing
2	Substantive testing of Property, Plant, Equipment (PPE)	Group presentation
3	Substantive testing of revenue	Group presentation
4	Substantive testing of revenue	Group presentation
5	Completing and reporting on the audit	Group presentation
6	Completing and reporting on the audit	Group presentation
7	Post Test 2	

Appendix F. Kolmogorov Smirnov Normality Test

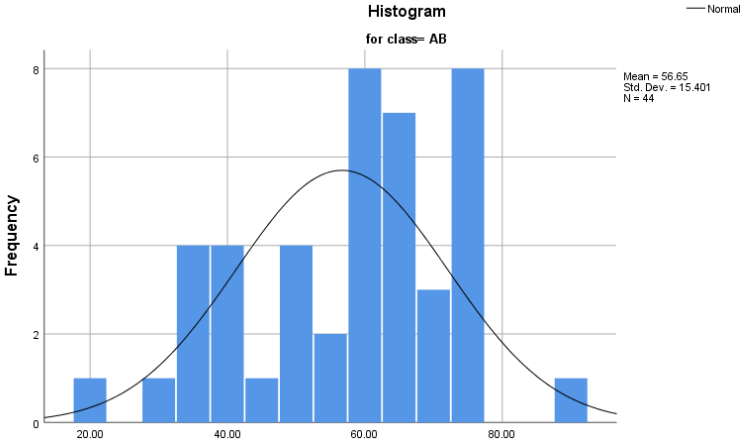
	Group	Kolmogorov Smirnov Test		
		Statistic	df	P-value
Technical Competence (Pre-intervention)	AB	.131	44	.057
	CD	.174	44	**.002**
Technical Competence (Phase 1)	AB	.136	44	**.041**
	CD	.096	44	.200*
Technical Competence (Phase 2)	AB	.114	44	.181
	CD	.121	44	.107
Non-Technical Competence (Pre-intervention)	AB	.124	44	.086
	CD	.105	44	.200*
Non-Technical Competence (Phase 1)	AB	.147	44	**.018**
	CD	.076	44	.200*
Non-Technical Competence (Phase 2)	AB	.090	44	.200*
	CD	.129	44	.063
Technical & Non-Technical Competence (Pre-intervention)	AB	.122	44	.100
	CD	.117	44	.154
Technical & Non-Technical Competence (Phase 1)	AB	.119	44	.128
	CD	.085	44	.200*
Technical & Non-Technical Competence (Phase 2)	AB	.106	44	.200*
	CD	.090	44	.200*
Paired difference Technical Competence (Pre-intervention to Phase 1)	AB	.075	44	.200*
	CD	.107	44	.200*
Paired difference Technical Competence (Phase 1 to Phase 2)	AB	.074	44	.200*
	CD	.105	44	.200*
Paired difference Non-Technical Competence (Pre-intervention to Phase 1)	AB	.075	44	.200*
	CD	.104	44	.200*
Paired difference Non-Technical Competence (Phase 1 to Phase 2)	AB	.081	44	.200*
	CD	.084	44	.200*
Paired difference Technical & Non-Technical Competence (Pre-intervention to Phase 1)	AB	.066	44	.200*
	CD	.085	44	.200*
Paired difference Technical & Non-Technical Competence (Phase 1 to Phase 2)	AB	.111	44	.200*
	CD	.109	44	.200*

There are three variables that violate normality as assessed by a Kolmogorov Smirnov Test. A Normal Curve Histogram was used to observe the normality visually. According to the histograms below, the shape of the curves approximately peaks in the middle and are symmetrical. This was taken to indicate that the data is **approximately normally distributed.** The Non-parametric tests were also conducted on the data and the results were the same. Therefore, the assumption of normality was retained.

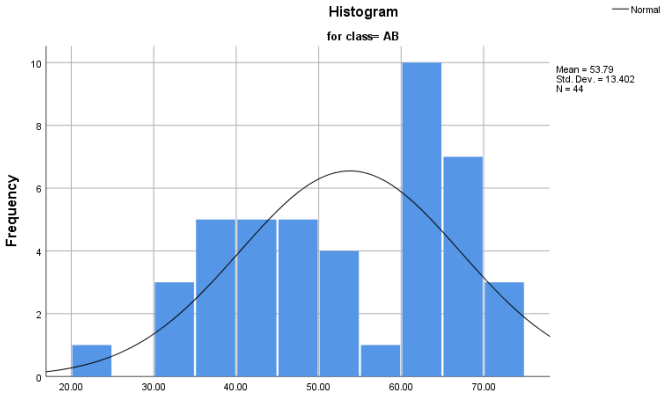
1. Technical Competence (Pre-Intervention): Group CD



2. Technical Competence (Phase 1): Group AB



3. Non-technical Competence (Phase 1): Group AB



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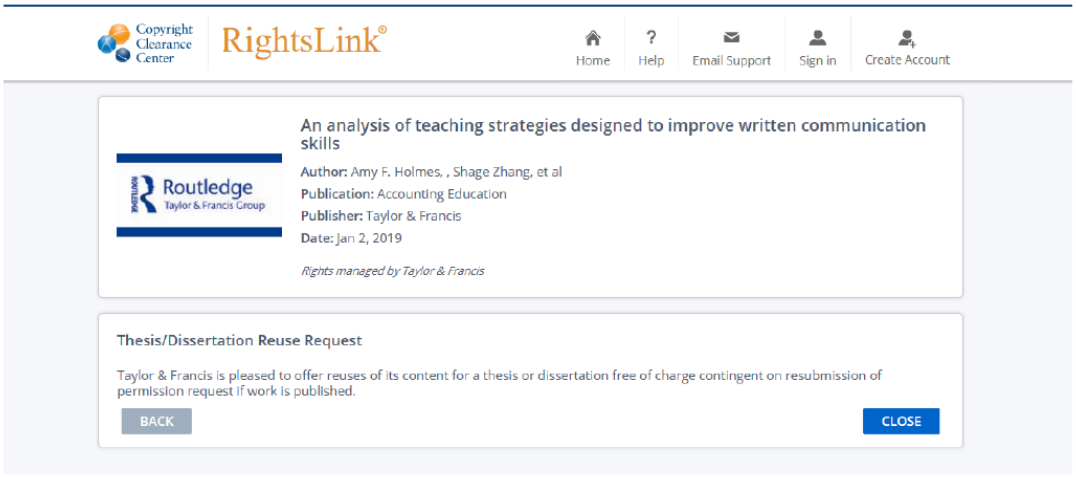

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		End Page	55
Author/Editor	American Accounting Association.	Issue	2
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Author/Editor	American Accounting Association.	Issue	1
Date	01/01/1986	Volume	28
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