ACCOUNTING EDUCATION
2021, VOL. 30, NO. 4, 325–354
https://doi.org/10.1080/09639284.2021.1913614

Routledge
Taylor & Francis Group

A critical thinking competency framework for accounting students

E. A. J. Terblanche [a] and B. De Clercq [b]

[a]Department of Financial Governance, University of South Africa, Pretoria, South Africa; [b]Department of Taxation, University of South Africa, Pretoria, South Africa

ABSTRACT

Critical thinking is considered a vital skill in the twenty-first century workforce, yet it is still viewed as an under-developed skill in accounting students. This exploratory study set out to explore the critical thinking competencies required of accounting students. To achieve this, a qualitative research methodology was followed by firstly identifying critical thinking competencies as part of a review of the literature. Terms, concepts, skills, attributes, dispositions and abilities needed for critical thinking in general were identified from seminal works on critical thinking, and then progressively analysed by the researchers to group similar concepts. Secondly, the principles of interactive qualitative analysis (IQA) were applied to obtain participants' views on the critical thinking competencies required of accounting students. This study provides a comprehensive critical thinking competency framework suitable for the changing environment in which accountants need to function to remain relevant in the Fourth Industrial Revolution.

ARTICLE HISTORY
Received 8 July 2020
Revised 23 October 2020; 24 March 2021
Accepted 1 April 2021

KEYWORDS
Critical thinking competencies; cognitive skills; dispositions; accounting students; interactive qualitative analysis; curriculum development

Introduction

Debates on the future role of professional accountants in the Fourth Industrial Revolution and the impact that machines and artificial intelligence (AI) will have on job security (Botha, 2019, p. 1) are ongoing. As routine tasks and activities of accountants have become increasingly automated, the true worth of the accountant has shifted to higher-order thinking skills, which include critical thinking, problem-solving and analytical skills (American Accounting Association, 2012, p. 87; Barac, 2017, p. 1; Hunton, 2002, p. 67). Professional accountants are no longer only number crunchers and bookkeepers, but are increasingly expected to be strategic analysts, collaborators and knowledge professionals (Lim, Lee, Yap, & Ling, 2016, p. 185). Exploring the concept of critical thinking in education is not an easy task as there is no single clear, unifying definition of this concept (Daniel, 2013, p. 13). Labelled as one of the most difficult terms in education (Thomas & Lok, 2015, p. 93), a lack of consensus on agreed terminology for describing the concept of critical thinking is furthermore causing confusion among educators (Hepner, 2015, pp. 73–74; Reed, 1998, pp. 14–15).

CONTACT E. A. J. Terblanche terbleaj@unisa.ac.za

To address the lack of a clearly defined and demarcated competency area, this study aims to develop a framework that will unify critical thinking competencies identified in existing literature and by educational experts, educators and students in the field of accountancy. Although critical thinking competency frameworks do exist for other disciplines, as mentioned in the next paragraph, this study will provide such a framework for the field of accountancy to address the changing requirements of the profession.

Although there are a number of frameworks for critical thinking in the literature (Atabaki, Keshtiaray, & Yarmohammadian, 2015, pp. 93–102; Duron, Limbach, & Waugh, 2006, pp. 160–166; Nair & Stamler, 2013, pp. 131–138; Paul & Elder, 2005, pp. 1–66; Thomas & Lok, 2015, pp. 93–105), these generally only offer insights into broad concepts or certain dimensions of critical thinking. They also do not provide specific insights into (or only provide a very limited scope of) critical thinking competencies from an accounting education viewpoint, as discussed in the literature review section. For example, Kimmel (1995, pp. 299–318) provides a basic framework for integrating critical thinking into the accounting curriculum but does not provide a comprehensive list of critical thinking competencies required of accounting students.[1] Baril, Cunningham, Fordham, Gardner, and Wolcott (1998, pp. 381–406) attempt to identify critical thinking competencies vital for success in public accounting. These competencies are identified mainly from job performance appraisals obtained from public accounting firms and through interviews with professionals at seven public accounting firms. Although various critical thinking competencies are identified, these do not take into account the perspectives of educators or accounting students.

The lack of a holistic framework for critical thinking in the field of accountancy could also be because there does not seem to be one definition for critical thinking that all professional bodies accept. In the South African context, the South African Institute of Chartered Accountants (SAICA) defines critical thinking as a process of *actively conceptualising, applying, analysing, synthesising, and/or evaluating information. It is evidenced by clarity, accuracy, precision, consistency, relevance, sound evidence, good reasoning, depth and breadth* (SAICA, 2018, p. 45). From an international perspective, the closest related term to critical thinking in the American Institute of Certified Public Accountants (AICPA) framework is the term decision-making, which is listed as a professional competency. Decision-making includes the ability to *objectively identify and critically assess issues and use professional judgement to develop appropriate decision models, identify and analyse the costs and benefits of alternative courses of action and recommend optimal solutions* (AICPA, 2018, p. 1).

It is therefore evident that a comprehensive framework of critical thinking competencies required of accounting students is lacking in accounting education. The researchers identified this as a gap in the literature and set out to contribute to this area of study by providing novel insights into this multifaceted phenomenon. In view of this, the following research question was formulated for this study: *What specific critical thinking competencies are required of accounting students?* To answer the research question, the researchers applied a two-phased approach. The first phase involved a broad literature review to acquire a theoretical understanding of critical thinking competencies in a broader sense. The literature review had a dual purpose: it provided insights into this multifaceted concept from a contextual background perspective; and it served as a method of collecting data on concepts in the proposed critical thinking competency

framework. Through a review of the literature, competencies in critical thinking were identified and synthesised into an initial scholarly, substantive, critical thinking competency framework (Wiek, Keeler, & Redman, 2011, pp. 203–204). The second phase of the project consisted of the collection of additional qualitative data by means of an interactive qualitative analysis (IQA) approach (Northcutt & McCoy, 2004, pp. xi–425).

By applying a qualitative research methodology within the constructivist/interpretivist paradigm, it is possible to obtain participants' views on a phenomenon being studied where reality is socially constructed (Mackenzie & Knipe, 2006, p. 4). By means of focus groups, the views of three groups of participants were obtained on what they believed to be critical thinking competencies required of accounting students. Participants in these three groups included educational experts, educators involved in chartered accountancy academic programmes in South Africa and postgraduate accounting students. These insights confirmed some of the findings from the literature review, but also identified additional areas pertaining to the accounting discipline.

Contribution

This study provides a comprehensive critical thinking competency framework suitable for the changing environment in which accountants need to function to remain relevant in the Fourth Industrial Revolution. The insights gained from this study could provide guidance for the further enhancement of professional accounting bodies' competency frameworks, curriculum design and the revision of academic accounting programmes offered by higher education institutions. It could also lay the foundation for future work on the assessment of critical thinking competencies, for example through critical thinking assessment rubrics.

The literature review section offers insights into the definitions and dimensions of critical thinking from a variety of disciplines, with a particular focus on the accounting discipline. This section is followed by the research methodology section in which the research design and method of data collection are described. The data analysis and findings sections present the insights obtained from the IQA focus group discussions. The conclusion section highlights the contributions of this study as well as its limitations.

Literature review

Critical thinking

Critical thinking generally involves purposeful thinking or reflective judgement (Sahin & Dogantay, 2018, p. 108). The literature makes it clear that critical thinking includes the ability to organise and use information in a rational and logical way, although the information might not be complete (Baril et al., 1998, p. 383). Critical thinking allows an individual to identify incorrect, false, incomplete and obsolete information. An accomplished critical thinker is also able to differentiate between logical reasoning and personal opinion (Saadé, Morin, & Thomas, 2012, pp. 1608–1609). Taking this into account, critical thinking is considered a vital skill in the twenty-first century workforce (Daniel, 2013, p. 3; World Economic Forum, 2016, p. 4) and a prized commodity in the accounting profession (Barac, 2017, p. 1).

Bloom et al.'s (1956) taxonomy and Bloom's revised taxonomy (Anderson & Krathwohl, 2001, pp. 67–68) are often referred to as a foundation for determining students' critical thinking abilities (Nelson & Crow, 2014, p. 78). The lower levels of cognitive abilities are remembering, understanding and applying, while the higher levels of cognitive abilities are analysing, evaluating and creating. Higher education educators are encouraged to engage students in the higher levels of cognitive abilities (Yusuf & Adeoye, 2012, p. 314) to develop higher-order thinking. However, Ennis (a philosopher of education) states that although the upper three levels of Bloom's taxonomy form a basis for critical thinking definitions, Bloom's taxonomy does not provide sufficient guidance for the actual development of critical thinking (Ennis, as cited in Atabaki et al., 2015, pp. 95–96). Ennis defines critical thinking as reflective and reasonable thinking aimed at making decisions about what to believe or do (Ennis, 1985, p. 45, 2015, pp. 32–45), and he identifies a number of skills and dispositions associated with critical thinking (Ennis, 2015, pp. 32–45). Paul's (1992, pp. 1–13) definition of critical thinking remains widely accepted among philosophers (Hepner, 2015, pp. 75–76). In Paul's (1992, pp. 1–13) view, critical thinking can be regarded as disciplined and self-directed thinking, and he identifies a number of traits of the mind, referred to as dispositions, associated with critical thinking. Bensley and Spero (2014, p. 56) indicate that although philosophers such as Ennis and Paul identify the importance of self-reflection for critical thinking, they do not mention metacognition. Metacognition refers to knowledge, awareness and control of one's own cognition, and is thus related to the ability to assess one's own comprehension, knowledge and thinking (Bensley & Spero, 2014, p. 56).

In the absence of a conclusive definition of critical thinking, the American Philosophical Association (APA), under the leadership of Facione, has attempted to provide one of the first consensus statements on this concept, and this consensus statement is widely used in various studies and disciplines (Abrami et al., 2015, p. 277; Nair & Stamler, 2013, p. 134). The APA defines critical thinking as *purposeful, self-regulatory judgement which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or contextual considerations upon which that judgement is based* (Facione, 1990, p. 2). The APA identifies certain core cognitive skills and dispositions (habits of the mind or attitudes) as dimensions associated with critical thinking (Facione, 1990, pp. 9–13, 2015, pp. 10–12). Davies and Barnett (2015, pp. 10–12), however, note that although the APA's definition is clearly important for educational philosophers, it does not lend itself easily to educational implementation. They assert that this definition, although seen as a consensus definition on critical thinking, may not be practical for curriculum development in higher education. Scheffer and Rubenfeld (2000, p. 352) conducted a similar study to that of the APA, the aim of which was to achieve consensus on a definition and conceptualisation of critical thinking specific to nursing. In their study they identified similar critical thinking cognitive skills and dispositions that could be applied from a nursing perspective. Simpson and Courtney (2002, pp. 89–98) conducted a literature review on critical thinking specifically in the field of nursing and identified several cognitive skills as well as dispositions associated with critical thinking. Several of these skills and dispositions seem to overlap with those identified by Scheffer and Rubenfeld (2000, pp. 352–359).

Dwyer, Hogan, and Stewart (2014, pp. 43–52) set out to develop an integrated critical thinking framework for the twenty-first century. They investigated existing theoretical

frameworks of thinking skills as well as cognitive models developed through empirical research. Their framework identifies memory/knowledge and comprehension as foundational processes necessary for effective critical thinking application. They also integrated critical thinking skills, reflective judgement and self-regulatory functions of metacognition in their framework. Thomas and Lok (2015, pp. 93–105) furthermore summarised some of the main skills, dispositions and knowledge associated with critical thinking, in order to develop an operational framework for teaching critical thinking. According to Sahin and Dogantay (2018, p. 109), critical thinking requires the internalisation of knowledge and skills as opposed to the memorisation and the recall of facts and information. Critical thinking is thus in essence focused on a process of interpreting and evaluating assumptions – it focuses on transforming the individual's perspectives by altering their way of thinking as opposed to merely acquiring knowledge and using it when needed based on memory (Sahin & Dogantay, 2018, p. 109).

Based on the literature review set out in this section, the generally accepted dimensions of critical thinking are cognitive skills (attributes or abilities) and dispositions (habits of the mind), as described by the Ennis (1985, p. 45, 2015, pp. 32–45), Facione (1990, pp. 1–19; 2015, pp. 1–28), Scheffer and Rubenfeld (2000, pp. 352–359), Simpson and Courtney (2002, pp. 9–10), Dwyer et al. (2014, pp. 43–52), and Thomas and Lok (2015, p. 94). Through a review of the literature presented in this section, competencies in critical thinking were identified and synthesised into an initial scholarly, substantive framework for critical thinking competencies as proposed in Table 1.

However, there seems to be little consensus about whether critical thinking is a combination of various generic skills that apply across subject domains, or whether it depends on the subject or discipline in which it is developed (Abrami et al., 2015, p. 280). Bailin, Case, Coombs, and Daniels (1999, p. 271) are of the opinion that critical thinking skills are generic and that these skills can be developed in the absence of specific subject or discipline knowledge. This view is shared by Nair and Stamler (2013, p. 132), who consider critical thinking skills universal. According to Abrami et al. (2015, p. 281), psychologists tend to favour the generic skills approach and believe that critical thinking skills and dispositions are generalisable across diverse contexts.

Jones (2015, p. 169), on the other hand, argues that although there might be shared elements, critical thinking is still considered unique within a discipline. Critical thinking is developed within the conventions, methodologies and content knowledge of a particular discipline, together with the structure this context provides. Facione (2000, p. 65) similarly believes that for a person to apply the core critical thinking skills effectively, the methods, theories, criteria and principles of a specific discipline should be considered.

In principle, although there are commonalities in critical thinking skills and dispositions among various disciplines and contexts, there are also important differences that should be taken into account (Jones, 2015, p. 169). It is therefore important to explore critical thinking in the context of accounting education.

Critical thinking in accounting education

It is not surprising that educators, policymakers and employers are all demonstrating a rapidly growing interest in the development of critical thinking in students (Huber & Kuncel, 2016, p. 431). According to Lim et al. (2016, p. 186), critical thinking is one of

Table 1. Initial critical thinking competency framework.

Initial framework – critical thinking competencies derived from a review of the literature		
	Critical thinking cognitive skills (attributes or abilities)	Critical thinking dispositions (habits of the mind)
(Ennis, 1985, p. 45, 2015, pp. 32–45)	*Critical thinking abilities* • Have a focus and pursue it (ability to identify, attend to and keep track of a focus). • Analyse arguments. • Ask and answer clarification questions. Ask the crucial critical thinking question, 'why?' • Understand and use graphs and maths. • Judge the credibility of a source. • Observe and judge observation reports. • Use background knowledge, knowledge of the situation and previously established conclusions. • Deduce and evaluate deductions. • Make and evaluate inductive inferences and arguments (both enumerative induction and best-explanation reasoning). • Make and evaluate value judgements. • Define terms and evaluate definitions. • Handle equivocation – take advantage of the ambiguity of a term to support a position. • Attribute and judge unstated assumptions. • Think suppositionally. • Deal with fallacy labels, for example hearsay, bandwagon and appeal to authority. • Be aware of and check the quality of own thinking (metacognition). • Deal with things in an orderly manner. • Deal with rhetorical strategies (strategies that can be used to deceive).	*Critical thinking dispositions* • Seek and offer clear statements of the thesis or question. • Seek and offer clear reasons. • Try to be well-informed. • Use credible sources and observations, and usually mention them. • Take into account the total situation. • Keep in mind the basic concern in the context. • Be alert for alternatives. • Be open-minded and seriously consider alternative points of view; withhold judgement when the evidence and reasons are insufficient. • Take a position and change a position when the evidence and reasons are sufficient. • Seek as much precision as the situation requires. • Try to 'get it right' to the extent possible and feasible. • Employ critical thinking abilities.
Facione (1990, pp. 2–19; 2015, pp. 1–28)	*Core critical thinking skills* • *Interpretation:* To comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgements, conventions, beliefs, rules, procedures or criteria. • *Analysis:* To identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgements, experiences, reasons, information or opinions. • *Evaluation:* To assess the credibility of statements or other representations that are accounts or descriptions of a person's perception, experience, situation, judgement, belief or opinion; to assess the logical strength of the	*Affective dispositions of a critical thinking* • Inquisitive about a wide range of issues. • Concerned with becoming and remaining generally well-informed. • Alertness to opportunities to use critical thinking. • Trust in the processes of reasoned inquiry. • Confidence in one's own ability to reason. • Open-mindedness about divergent worldviews. • Flexibility in considering alternatives and opinions. • Understanding of the opinions of other people. • Fair-mindedness in appraising reasoning. • Honesty in facing one's own biases, prejudices, stereotypes and egocentric or sociocentric tendencies.

Table 1. Continued.

Initial framework – critical thinking competencies derived from a review of the literature	
Critical thinking cognitive skills (attributes or abilities)	Critical thinking dispositions (habits of the mind)
actual or intended inferential relationships among statements, descriptions, questions or other forms of representation. • *Inference:* To identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information and to educe the consequences arising from data, statements, principles, evidence, judgements, beliefs, opinions, concepts, descriptions, questions or other forms of representation. • *Explanation/explain:* To state the results of one's reasoning; to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results are based; and to present one's reasoning in the form of cogent arguments. • *Self-regulation:* Self-consciously to monitor one's cognitive activities, the elements used in those activities and the results educed, particularly by applying skills in analysis and evaluation to one's own inferential judgements with a view to questioning, confirming, validating or correcting either one's reasoning or one's results.	• Prudence in suspending, making or altering judgements. • Willingness to reconsider and revise views when honest reflection suggests that change is warranted. • Clarity in stating the question or concern. • Orderliness in working with complexity. • Diligence in seeking relevant information. • Reasonableness in selecting and applying criteria. • Care in focusing attention on the concern at hand. • Persistence though difficulties that are encountered. • Precision to the degree permitted by the subject and the circumstance.
Paul (1992, pp. 12–13)	*Traits of the mind* • *Intellectual humility*: Awareness of the limits of one's knowledge, including sensitivity to circumstances in which one's inborn egocentrism is likely to function self-deceptively, and sensitivity to bias and prejudice in one's viewpoint. • *Intellectual courage:* A willingness to face and fairly assess ideas, beliefs or viewpoints to which one has not given a serious hearing, regardless of strong negative reactions to them. • *Intellectual empathy*: A recognition of the need to put oneself imaginatively in the place of others in order to genuinely understand them. • *Intellectual good faith (integrity):* A recognition of the need to be true to one's own thinking, to be consistent in the intellectual standards that one applies, and to hold oneself to the same rigorous standards of evidence and proof as those to which one holds one's antagonists. • *Intellectual perseverance:* The willingness to pursue intellectual insights and truths despite difficulties, obstacles and frustrations. • *Faith in reason:* Confidence that in the long run one's own higher interests and those of humanity at large will best be served by giving the freest play to reason and by encouraging people to come to their own conclusions through development of their own rational faculties.

(*Continued*)

Table 1. Continued.

Initial framework – critical thinking competencies derived from a review of the literature		
	Critical thinking cognitive skills (attributes or abilities)	Critical thinking dispositions (habits of the mind)
		• *Intellectual sense of justice:* The willingness to entertain all viewpoints sympathetically and to assess them according to the same intellectual standards, without reference to one's own feelings or vested interests or to the feelings or vested interests of one's friends, community or nation.
Scheffer and Rubenfeld (2000, pp. 352–359)	*Skills of critical thinking in nursing* • *Analysing:* Separating or breaking a whole into parts to discover their nature, function and relationships. • *Applying standards:* Judging according to established personal, professional or social rules or criteria. • *Discriminating:* Recognising differences and similarities among things or situations and carefully distinguishing category or rank. • *Information seeking:* Searching for evidence, facts or knowledge by identifying relevant sources and gathering objective, subjective, historical and current data from those sources. • *Logical reasoning:* Drawing inferences or conclusions that are supported or justified by evidence. • *Predicting:* Envisioning a plan and its consequences. • *Transforming knowledge:* Changing or converting the condition, nature, form or function of concepts among contexts.	*Habits of the mind in nursing* • *Confidence:* Assurance of one's own reasoning abilities. • *Contextual perspective:* Considerate of the whole situation, including relationships, background and environment that are relevant to something happening. • *Creativity:* Intellectual inventiveness used to generate, discover or restructure ideas; imagining alternatives. • *Flexibility:* Capacity to adapt, accommodate, modify or change thoughts, ideas and behaviours. • *Inquisitiveness:* An eagerness to know by seeking knowledge and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives. • *Intellectual integrity:* Seeking the truth through sincere, honest processes, even if the results are contrary to one's assumptions and beliefs. • *Intuition:* Insightful sense of knowing without conscious use of reason. • *Open-mindedness:* A viewpoint characterised by being receptive to divergent views and sensitive to one's biases. • *Perseverance:* Pursuit of a course with determination to overcome obstacles. • *Reflection:* Contemplation upon a subject and upon one's assumptions and thinking for the purposes of deeper understanding and self-evaluation.
Simpson and Courtney (2002, pp. 9–10)	*Cognitive critical thinking skills* • *Interpretation:* Accurately interpreting problems as well as objective and subjective data from common information sources. • *Analysis:* Examining ideas/arguments in problems, objective and subjective data, and possible courses of action. • *Inference:* Querying claims, assessing arguments (recognising faulty reasoning) and reaching conclusions that are appropriate. • *Explanation:* Clearly explaining and defending the reasoning by which an individual arrives at specific decisions. • *Evaluation:* Evaluating information to ascertain its probable trustworthiness and relevance. • *Self-regulation:* Constantly monitoring one's own thinking using universal criteria.	*Dispositions* • *Open-minded:* Having an appreciation of alternate perspectives and a willingness to respect the rights of others to hold different opinions. • *Inquisitive:* Curious and enthusiastic in wanting to acquire knowledge and wanting to know how things work, even when the applications are not immediately apparent. • *Truth-seeking:* Courageous about asking questions to obtain the best knowledge, even if such knowledge may fail to support one's preconceptions, beliefs or interests. • *Analytical:* Thinking analytically and using verifiable information. Demanding the application of reason and evidence, and the inclination to anticipate consequences.

Table 1. Continued.

	Initial framework – critical thinking competencies derived from a review of the literature	
	Critical thinking cognitive skills (attributes or abilities)	Critical thinking dispositions (habits of the mind)
		• *Systematic:* Valuing organisation and a focused and diligent approach to problems of all levels of complexity. • *Self-confident:* Trusting one's own reasoning and inclination to utilise these skills, rather than other strategies, in order to respond to problems.
Dwyer et al. (2014, pp. 43–52)	*Core critical thinking skills* • *Analysis:* Used in the context of argumentation to detect, examine and identify the propositions within. • *Evaluation:* Used in the assessment of propositions and the conclusions they infer with respect to their credibility, relevance, logical strength and the potential for omissions, bias and imbalance in the argument; thus, deciding the overall strength or weakness of the argument. • *Inference*: Involves the gathering of credible, relevant and logical evidence based on the previous analysis and evaluation of available evidence, for the purposes of drawing a reasonable conclusion. • *Reflective judgement:* The ability to conduct metacognition and apply critical thinking skills to a particular problem implies a reflective sensibility and the capacity for reflective judgement.	
Thomas and Lok (2015, pp. 93–105)	*Critical thinking skills* • Interpretation. • Explanation. • Analysis. • Inference. • Evaluation. • Self-regulation.	*Dispositions associated with critical thinking* • Is clear about the intended meaning. • Is systematic. • Takes the total situation into account. • Is analytical. • Is inquisitive. • Looks for alternatives. • Seeks precision as the situation requires. • Is conscious (aware). • Is open-minded. • Is truth-seeking. • Uses one's critical thinking abilities. • Is intentionally careful. • Is metacognitive. • Is self-confident. • Shows maturity.

the top-rated generic skills sought by employers and practitioners in new accounting graduates. In a study conducted by Lim et al. (2016, pp. 185–192), it was found that accounting graduates do not possess the required skills and attributes to the extent required by employers. Cloete (2018, p. 479) similarly asserts that graduates are generally underprepared for the work environment and that they lack critical thinking skills. Accounting education has subsequently come under criticism for not addressing the skills requirements of the business environment (Awayiga, Onumah, & Tsamenyi, 2010, p. 139; Hussein, 2017, pp. 2162–2163; Low, Samkin, & Liu, 2013, pp. 1–2).

Concerns have also been raised that university accounting programmes focus too closely on the development of technical content knowledge and not enough on the development of pervasive or soft skills (Kavanagh & Drennan, 2008, p. 279; Van Romburgh & Van der Merwe, 2015, pp. 141–143). Albrecht and Sack (2000, pp. 49–53) raise serious concerns about the manner in which the accounting curriculum is taught to students, and suggest a complete revision of the curriculum to place greater emphasis on the development of critical skills (Albrecht & Sack, 2000, pp. 60–66). This need for the renewal of accounting curriculum and pedagogy is also identified in the 2012 Pathways Commission Report (American Accounting Association, 2012, pp. 12–13). However, little guidance seems to be given on precisely how these pervasive or soft skills should be developed (Barac & Du Plessis, 2014, p. 54).

The role of higher education institutions in delivering highly skilled and qualified graduates to overcome skills shortages is therefore under the spotlight (Fisher & Scott, 2011, p. 1). Higher education institutions generally strive to empower students to become active learners, to take responsibility for their own learning and to develop essential higher-order skills such as critical thinking (Saadé et al., 2012, pp. 1608–1609). In accordance with the accounting standards set by the Association to Advance Collegiate Schools of Business, also known as AACSB International, an accounting programme should address critical thinking and analytical skills that support professional scepticism and risk assessment (AACSB, 2018, p. 24).

Accounting educators are generally guided by the competency frameworks of professional accountancy bodies that set out the competencies and skills that accounting graduates should have upon entering the profession. The International Federation of Accountants (IFAC) (2020, p. 1) is a global organisation for the accountancy profession; it aims to establish high-quality, international educational standards relevant to the professional development of accountants and auditors, through the International Accounting Education Standards Board (IAESB) (2019, pp. 1–4), an independent standard-setting body. IFAC member bodies and its members are required to comply with the requirements of these educational standards. Both the AICPA and SAICA are member bodies of IFAC.

IES 3 and IES 4 form part of the IAESB educational standards and prescribe the professional skills and professional values, ethics and attitudes that professional accountants should achieve by the end of their initial professional development. IES 3 (IAESB, 2019, p. 132) explains the term critical thinking in one of the learning outcomes of the intellectual competency area as follows: *[to] apply critical thinking skills to solve problems, inform judgements, make decisions, and reach well-reasoned conclusions*. In IES 4 (IAESB, 2019, p. 143), a reference to critical thinking can be found in one of the learning outcomes of the professional scepticism and professional judgement competency area,

which prescribes the ability to *apply critical thinking when identifying and evaluating alternatives to determine an appropriate course of action*. These references to critical thinking in IES 3 and IES 4 provide a definition of critical thinking rather than specific detail on critical thinking competencies needed by professional accountants.

AICPA (2018, p. 1) is considered one of the largest member associations representing the accounting profession globally. In 2018, AICPA released a pre-certification core competency framework that had been developed as part of a collaborative effort between accounting professionals and educators. The AICPA core competency framework sets out skills-based competencies that are required of entry-level accounting professionals. These include accounting competencies, business competencies and professional competencies. As mentioned in the introduction section, the AICPA framework leans more towards decision-making than critical thinking, and as such it gives no explicit guidance on specific critical thinking skills or dispositions.

SAICA is considered the leading professional accounting body in South Africa; it is responsible for the regulation of and standard setting for requirements of the chartered accountancy designation. The SAICA (2018, pp. 1–228) competency framework provides guidance on the competencies that an entry-level chartered accountant should have upon entry into the profession. Critical thinking forms part of professional skills, which in turn form part of the pervasive qualities and skills required according to the SAICA competency framework. Upon entering the profession, chartered accountants should be able to demonstrate all the pervasive qualities and skills at an advanced level. According to the SAICA competency framework, critical thinking is the ability to examine and interpret information and ideas critically (SAICA, 2018, p. 45). The SAICA framework furthermore stipulates that critical thinking includes the ability to analyse information or ideas; to perform computations; to verify and validate information; to integrate ideas and information from various sources; and to draw conclusions or form opinions. However, the SAICA framework does not provide adequate detail on the wide array of critical thinking skills and dispositions that the entry-level chartered accountants should have to meet the needs of the changing profession. At the time of this study, the SAICA competency framework was being revised to offer a larger focus on the pervasive qualities and skills of chartered accountants.

Research methodology

Research design

A qualitative research methodology in the constructivist/interpretivist paradigm (Mackenzie & Knipe, 2006, p. 4) was followed in this study to explore the critical thinking competencies required of accounting students. Constructivist/interpretivist research approaches are aimed at obtaining an understanding of human experiences and how reality is socially constructed. These approaches are ideal when participants' views are obtained on a phenomenon being studied (Mackenzie & Knipe, 2006, p. 4).

The literature review conducted as part of the study was based primarily on data from peer-reviewed journal articles, reports and books. The literature review was carried out to provide contextual background information on critical thinking and as a method of data collection for the initial critical thinking competency framework (see Table 1). In

developing critical thinking competency frameworks, it is important to note that competencies in critical thinking, through the dimensions of cognitive skills and dispositions, may overlap. When educators set out to develop a particular critical thinking competency, other competencies may also be developed in the process, as they may be interrelated and function in a dynamic relationship with one another (Paul & Elder, 2005, pp. 14–17). The researchers followed an iterative and focused process to place the critical thinking competencies identified in the literature in the dimensions of a variety of existing labels for cognitive skills (attributes) and dispositions (habits of the mind). Terms, concepts, skills, attributes, dispositions and abilities needed for critical thinking in general were first identified from seminal works on critical thinking, and then progressively analysed by the researchers to group similar concepts (Sinkovics & Alfoldi, 2012, pp. 817–845).

The principles of IQA, as described by Northcutt and McCoy (2004, pp. xi–425), were then applied in this exploratory study. This particular study formed part of a larger research study, the aim of which was to obtain the views of participants on what they believed to be important considerations in the effective development of accounting students' critical thinking. These insights were obtained through IQA focus groups with educational experts, educators involved in chartered accountancy academic programmes in South Africa and postgraduate accounting students. The considerations obtained from these participants, referred to as affinities in terms of IQA protocol, included several aspects that related specifically to the critical thinking competencies required of accounting students, which were the focus of this particular study. The researchers therefore firstly analysed the considerations obtained through the IQA focus groups of the larger study, and identified only those considerations that related to critical thinking competencies, that is those related to cognitive skills (abilities) and dispositions (habits of the mind). The critical thinking competencies provided by the IQA focus groups were then further analysed by the researchers and compared with the competencies identified as part of the literature review to ascertain whether the participants identified similar critical thinking competencies, or whether certain competencies that were specific to the accounting education context needed to be added to the framework proposed in this study.

IQA is considered a structured approach within qualitative research (Northcutt & McCoy, 2004, p. xxi) that allows groups to construct their own interpretation of a phenomenon (Northcutt & McCoy, 2004, pp. 43–44). IQA is grounded in systems theory, which allows for the construction, interpretation and comparison of mind maps of different groups (Northcutt & McCoy, 2004, p. xxii). IQA was considered ideal for this study, since it provides a contextualised, potentially differentiated, yet rigorous approach to a problem, and its application allows the identification of similarities and differences across groups (Northcutt & McCoy, 2004, p. xxii). Ethical approval for the study was obtained through institutional processes and all participants signed informed consent forms. Participation in the IQA focus groups was voluntary.

Participant selection process and data collection

IQA studies generally start off with a focus group or focus groups (Northcutt & McCoy, 2004, p. 47). Northcutt and McCoy (2004, p. 46) assert that it is desirable to include more

than one focus group as different focus groups have different views on a particular phenomenon. Both Nienaber (2013, pp. 18–19) and Plant (2015, p. 20) included four IQA focus groups in their respective studies. Robertson (2015, pp. 96–97), however, included two focus groups in her study, while Du Preez (2015, p. 16) only included one focus group in her study. Taking these guidelines into account, three IQA focus groups were considered adequate for the study under discussion.

Northcutt and McCoy (2004, p. 87) advise that a focus group should include between 12 and 20 participants, but note that groups smaller than 12 are not a serious concern during the affinity production in the IQA process. For purposes of this particular study, the first focus group (group 1 – educational experts) consisted of nine participants comprising instructional designers, online learning designers, educational technologists, teaching and learning consultants and experts in e-learning environments. Participants in group 1 were purposively selected based on their professional profiles. Participants in this group were recruited via LinkedIn, university websites and Google searches. Another focus group discussion was conducted with a sample of educators involved in chartered accountancy academic programmes in South Africa (group 2 – educators). This group of 13 participants included educators from one distance learning university and two traditional (face-to-face) universities in South Africa, as well as representatives from the professional governing body, SAICA. At the time of the focus group, these educators were all involved in teaching modules related to chartered accountancy studies from second-year to postgraduate level at SAICA-accredited programme providers. Participants in this group were purposively selected and recruited via university websites, personal contact details and the official SAICA website.

The final focus group discussion was conducted with a sample of postgraduate accounting students registered for a postgraduate diploma in accounting sciences at a distance learning university in South Africa (group 3 – accounting students). This group consisted of nine postgraduate accounting students who were purposively selected based on their registration for this course in the 2017 academic year. The focus group sizes for all three groups were considered adequate, since they were small enough to encourage participants to share their insights freely, yet large enough to allow for diversity in views (Krueger & Casey, 2009, p. 6).

Each IQA focus group discussion was conducted on a different date during the tenure of the project and similar procedures were followed for all three groups. The researchers sent an information sheet via e-mail to focus group participants prior to the focus group discussions. This information sheet provided the definition and dimensions of critical thinking selected for the purposes of the study, the aim of the study and the research question. During the focus group discussions, an independent facilitator asked the participants to reflect silently on what they would consider necessary for the effective development of critical thinking in accounting students. During this silent brainstorming session, participants then wrote down their thoughts on notecards (Northcutt & McCoy, 2004, p. 47). The notecards were taped to the wall, after which the participants were given the opportunity to obtain clarity about the meanings of any notecards they were unsure about and to add more notecards. The facilitator then asked the groups to group notecards with similar meanings (inductive coding) without speaking to one another and to name groupings as part of a revision phase (axial coding). Groupings of a similar meaning are referred to as affinities (Northcutt & McCoy, 2004, p. 47).

Following the focus group discussions, the researchers reviewed the notecards as well as the voice recordings in order to formulate definitions for the identified affinities in each of the two groups. The independent facilitator performed an independent review of these definitions based on the notecards to confirm that they were indeed a true reflection of what had been generated by the groups. These affinities, along with their definitions, were communicated to group participants via e-mail.

Through the focus group discussions and inductive and axial coding, participants were directly involved in providing their perspectives on what they believed to be necessary for the effective development of critical thinking in accounting students. These considerations included a number of critical thinking competencies required of accounting students, as discussed in the data analysis section that follows.

Data analysis

Group 1 (educational experts) produced 11 affinities, group 2 (educators) produced 12 affinities, and group 3 (accounting students) produced seven affinities – thus 30 affinities in all. These affinities represent the perspectives of each group on what they believed to be important considerations, including critical thinking competencies, in the effective development of critical thinking among accounting students. The researchers analysed these 30 affinities and identified only those that related to critical thinking competencies, that is those that related to cognitive skills (abilities) and dispositions (habits of the mind). Table 2 shows the affinities that were identified as part of this process and that represent critical thinking competencies as identified by the IQA focus groups.

Table 2. Critical thinking competencies as identified by the IQA focus groups.

Affinity name and description
Group 1: Educational experts
Soft skills and dispositions
The focus group identified a number of soft skills and dispositions that can be associated with critical thinking. They highlighted metacognition (thinking about one's thinking) and also listed empathy, ethical behaviour, intrinsic motivation, a positive attitude and good communication skills. Within auditing, the ability to assess a situation and ask the right questions was seen as a vital critical thinking skill.
Discipline-specific skills
The focus group identified judgement as a core discipline-specific skill and related it to making informed decisions. Other auditing-specific skills noted were the abilities to make constant critical comparisons, to be systematic, to be organised and to follow certain standards.
Group 2: Educators
Learning outcomes
The focus group indicated that once a student has developed their critical thinking abilities through the intervention, they should be able to think outside the box and adapt their thinking in different situations to come up with solutions to problems. Other learning outcomes associated with critical thinking development include pervasive skills, problem-solving abilities, discretionary thinking, reflecting on one's own thinking, the ability to identify and deal with ethical issues, and the ability to interrogate information.
Ethics
The focus group felt that ethical considerations should form an overarching theme in all aspects of critical thinking development, the design of educational interventions and the use of technologies. Ethics are considered to be a pillar of the chartered accountancy profession, and should drive the habits of the mind as well as the critical thinking skills of students.
Group 3: Accounting students
This group did not specifically identify aspects relating to critical thinking competencies.

Source: Affinities produced by IQA focus groups that relate to critical thinking competencies.

Of the 11 affinities that group 1 (educational experts) produced, the researchers identified two that related to critical thinking competencies. This group highlighted the need for certain soft skills and dispositions associated with critical thinking, and also emphasised the need for certain discipline-specific skills related to critical thinking. The researchers identified two affinities produced by group 2 (educators) that related to critical thinking competencies. Group 2 indicated that certain learning outcomes should be associated with critical thinking and also emphasised the importance of ethics in all aspects of critical thinking. Although group 3 (accounting students) produced seven affinities that they believed to be important considerations for effective critical thinking development, these did not relate to critical thinking competencies per se.

The critical thinking competencies provided by the IQA focus groups (see Table 2) were progressively analysed by the researchers and compared with the competencies identified as part of the review of the literature (see Table 1) to ascertain whether the participants identified similar critical thinking competencies, or whether certain competencies that were specific to the accounting education context needed to be added to the framework.

Findings and discussion

Metacognition

Group 1 stated that metacognition (thinking about one's thinking) forms part of the soft skills and dispositions associated with critical thinking. Group 2 noted that reflecting on one's own thinking is a learning outcome associated with critical thinking. This is in line with the critical thinking competencies identified in the initial framework in Table 1, where the critical thinking cognitive skill (attribute or ability) of self-regulation was identified from the literature as a critical thinking competency. A number of researchers conclude that metacognition and the ability to self-regulate one's own cognitive activities are vital for critical thinking (Dwyer et al., 2014, pp. 43–52; Ennis, 2015, pp. 32–45; Facione, 1990, pp. 2–11; Thomas & Lok, 2015, pp. 93–105). This critical thinking competency therefore already forms part of the self-regulation cognitive skill (see Table 1).

Empathy

Group 1 associated empathy with critical thinking. Empathy was already identified as a disposition (habit of the mind) associated with critical thinking in the initial framework (refer to Table 1), where it was noted that a critical thinker should have intellectual empathy, which entails the ability to understand someone else (Paul, 1992, pp. 12–13). A good critical thinker is also able to consider others' points of view sympathetically, even though these may differ from their own, and then discuss them in an insightful way (Paul & Elder, 2005, p. 34). A critical thinker should have the ability to see through someone else's eyes to truly understand different perspectives (Vilen, 2015, p. 1).

Ethical behaviour

Group 1 indicated that ethical behaviour forms part of the soft skills and dispositions associated with critical thinking. For Group 2, the ability to identify and deal with ethical issues is a learning outcome associated with critical thinking. Group 2 furthermore emphasised the importance of ethics, describing it as the pillar of the chartered accountancy profession that should drive the habits of the mind and critical thinking skills of students. Ethical behaviour and the ability to identify and deal with ethical issues were not specifically identified as critical thinking competencies from the literature review conducted for the study. The initial framework (see Table 1) did include intellectual good faith (integrity) as a disposition (habit of the mind), which involves recognition of the need to be true to one's own thinking and to be consistent in the intellectual standards that one applies. However, ethical behaviour, as identified by Groups 1 and 2, seems to demand more than this. Given that the accounting profession in general and large auditing firms in South Africa in particular have experienced an unsettling period during which unethical practices, scandals and cover-ups have been exposed (Andersen, 2018, p. 1), it is perhaps not surprising that the groups identified ethical behaviour as a critical thinking competency required of accounting students. Melillo (2010, p. 1) is also of the opinion that critical thinking plays a vital role in ethics, as critical thinking allows a person to analyse information and situations to determine whether something is right or wrong. Fasko (1994, pp. 3–12) similarly recognises a relationship between critical thinking and moral or ethical reasoning. Refer to Table 3, where ethical behaviour was added as a critical thinking disposition (habit of the mind) to the final proposed framework, and the ability to identify and deal with ethical issues was added as a critical thinking cognitive skill.

Intrinsic motivation

Group 1 associated intrinsic motivation with critical thinking. Baril et al. (1998, p. 398) are also of the opinion that good critical thinkers display initiative and motivation. These authors indicate that good critical thinkers have the motivation to take action and follow the logical course of events – they do not have to wait for specific instructions in order to complete tasks successfully. Intrinsic motivation had not been specifically identified as a critical thinking competency from the literature review conducted for the study, and was thus added as a critical thinking disposition (habit of the mind) in the final proposed framework in Table 3.

A positive attitude

Group 1 associated a positive attitude with critical thinking. A good critical thinker possesses critical thinking skills and the positive attitude to use them, according to Halpern (1998, p. 452). A positive attitude had not been specifically identified as a critical thinking competency from the literature review conducted for the study, and was thus added as a critical thinking disposition (habit of the mind) in the final proposed framework in Table 3.

Table 3. Critical thinking competency framework for accounting students.

Initial framework – Critical thinking competencies derived from a review of the literature	Critical thinking competencies identified by IQA focus groups in addition to those identified in initial framework
1. Cognitive skills (attributes or abilities) Interpretation/interpret (clarification/clarify) • Comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgements, conventions, beliefs, rules, procedures or criteria (Facione, 1990, pp. 2–11). • Recognise differences and similarities among things or situations, and distinguish category or rank carefully (Scheffer & Rubenfeld, 2000, p. 358). • Understand and use graphs and maths (Ennis, 2015, pp. 32–45). • Ask and answer clarification questions. Ask the crucial critical thinking question, 'why?' (Ennis, 2015, pp. 32–45). • Ability to comprehend/interpret (Dwyer et al., 2014, pp. 43–52; Thomas & Lok, 2015, pp. 93–105). • Accurately interpret problems as well as objective and subjective data from common information sources (Simpson & Courtney, 2002, p. 9). Analysis/analyse • Identify the intended and actual inferential relationships among statements, questions, concepts, descriptions or other forms of representation intended to express beliefs, judgements, experiences, reasons, information or opinions (Facione, 1990, pp. 2–11). • Break material down into its constituent parts, and determine how the parts relate to one another and to an overall structure or purpose (Anderson & Krathwohl, 2001, pp. i–x). • Separate or break a whole down into parts to discover their nature, function and relationships (Scheffer & Rubenfeld, 2000, p. 358). • Put elements together to form a coherent or functional whole; reorganise elements into a new pattern or structure (Anderson & Krathwohl, 2001, pp. i–x). • Analyse arguments (Ennis, 2015, pp. 32–45). • Critically analyse (SAICA, 2019, pp. 1–12). • Ability to analyse (Dwyer et al., 2014, pp. 43–52; Thomas & Lok, 2015, pp. 93–105). • Examine ideas/arguments in problems, objective and subjective data, and possible courses of action (Simpson & Courtney, 2002, p. 9). Evaluation/evaluate • Assess the credibility of statements or other representations that are accounts or descriptions of a person's perception, experience, situation, judgement, belief or opinion; and assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions or other forms of representation (Facione, 1990, pp. 2–11). • Make judgements based on criteria and standards (Anderson & Krathwohl, 2001, pp. i–x). • Judge according to established personal, professional or social rules or criteria (Scheffer & Rubenfeld, 2000, p. 358). • Judge the credibility of a source (Ennis, 2015, pp. 32–45). • Observe and judge observation reports (Ennis, 2015, pp. 32–45).	

(*Continued*)

Table 3. Continued.

Initial framework – Critical thinking competencies derived from a review of the literature	Critical thinking competencies identified by IQA focus groups in addition to those identified in initial framework
• Use background knowledge, knowledge of the situation and previously established conclusions (Ennis, 2015, pp. 32–45). • Attribute and judge unstated assumptions (Ennis, 2015, pp. 32–45). • Ability to evaluate (Dwyer et al., 2014, pp. 43–52; Thomas & Lok, 2015, pp. 93–105). • Evaluate information to ascertain its probable trustworthiness and relevance (Simpson & Courtney, 2002, p. 9). Making inferences/infer • Identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information; and to educe the consequences arising from data, statements, principles, evidence, judgements, beliefs, opinions, concepts, descriptions, questions or other forms of representation (Facione, 1990, pp. 2–11). • Search for evidence, facts or knowledge by identifying relevant sources and gathering objective, subjective, historical and current data from those sources (Scheffer & Rubenfeld, 2000, p. 358). • Draw inferences or conclusions that are supported or justified by evidence (Scheffer & Rubenfeld, 2000, p. 358). • Deduce and evaluate deductions (Ennis, 2015, pp. 32–45). • Make and evaluate inductive inferences and arguments (both enumerative induction and best-explanation reasoning) (Ennis, 2015, pp. 32–45). • Make and evaluate value judgements (Ennis, 2015, pp. 32–45). • Ability to make inferences (Dwyer et al., 2014, pp. 43–52; Thomas & Lok, 2015, pp. 93–105). • Ability to make reflective judgements (Dwyer et al., 2014, pp. 43–52). • Query claims, assess arguments (recognise faulty reasoning) and reach conclusions that are appropriate (Simpson & Courtney, 2002, p. 9). Explanation/explain • State the results of one's reasoning; justify that reasoning in terms of the evidential, conceptual, methodological, criteriological and contextual considerations upon which one's results were based; and present one's reasoning in the form of cogent arguments (Facione, 1990, pp. 2–11). • Define terms and evaluate definitions (Ennis, 2015, pp. 32–45). • Clearly explain and defend the reasoning by which an individual arrives at specific decisions (Simpson & Courtney, 2002, p. 9). • Ability to explain (Thomas & Lok, 2015, pp. 93–105). Self-regulation/self-regulate • Monitor one's cognitive activities, the elements used in those activities and the results educed, particularly by applying skills in analysis and evaluation to one's own inferential judgements with a view to questioning, confirming, validating or correcting either one's reasoning or one's results (Facione, 1990, pp. 2–11).	

(*Continued*)

Table 3. Continued.

Initial framework – Critical thinking competencies derived from a review of the literature	Critical thinking competencies identified by IQA focus groups in addition to those identified in initial framework
• Be aware of and check the quality of own thinking (metacognition) (Ennis, 2015, pp. 32–45). • Self-regulate functions of metacognition (Dwyer et al., 2014, pp. 43–52). • Ability to self-regulate (Thomas & Lok, 2015, pp. 93–105).	
Other • Ability to envision a plan and its consequences (Scheffer & Rubenfeld, 2000, p. 358). • Change or convert the condition, nature, form or function of concepts in different contexts (Scheffer & Rubenfeld, 2000, p. 358). • Handle equivocation; take advantage of the ambiguity of a term to support a position (Ennis, 2015, pp. 32–45). • Have a focus and pursue it (ability to identify, attend to and keep track of a focus) (Ennis, 2015, pp. 32–45). • Challenge assumptions (SAICA, 2019, pp. 1–12). • Deal with fallacy labels, for example hearsay, bandwagon and appeal to authority (Ennis, 2015, pp. 32–45). • Deal with rhetorical strategies (strategies that can be used to deceive) (Ennis, 2015, pp. 32–45). • Ability to recall and understand (i.e. lower-order thinking skills) the information one is required to think about (Dwyer et al., 2014, pp. 43–52).	• Ability to identify and deal with ethical issues. • Good communication skills. • The ability to think outside the box. • Pervasive skills (general).
2. Dispositions (habits of the mind) • Inquisitive about a wide range of issues (Facione, 1990, pp. 2–13); eager to know by seeking knowledge; and understanding through observation and thoughtful questioning in order to explore possibilities and alternatives [inquisitiveness] (Scheffer & Rubenfeld, 2000, p. 358). • Concerned with becoming and remaining generally well-informed (Facione, 1990, pp. 2–13); tries to be well-informed (Ennis, 2015, pp. 32–45). • Alert to opportunities to use critical thinking (Facione, 1990, pp. 2–13); uses critical thinking abilities (Thomas & Lok, 2015, pp. 93–105); employs critical thinking abilities (Ennis, 2015, pp. 32–45). • Trusts the processes of reasoned inquiry (Facione, 1990, pp. 2–13); has faith in reason, which is the confidence that in the long run one's own higher interests and those of humanity at large will best be served by giving the freest play to reason and by encouraging people to come to their own conclusions through development of their own rational faculties (Paul, 1992, pp. 12–13). • Confident in own ability to reason (Facione, 1990, pp. 2–13); is self-confident (Thomas & Lok, 2015, pp. 93–105); shows maturity (Thomas & Lok, 2015, pp. 93–105); assurance of one's own reasoning abilities [confidence] (Scheffer & Rubenfeld, 2000, p. 358). • Open-minded about divergent world views (Facione, 1990, pp. 2–13; Thomas & Lok, 2015, pp. 93–105); open-minded and seriously considers others' points of view without judgement when the evidence and reasons are insufficient (Ennis, 2015, pp. 32–45; Thomas & Lok, 2015, pp. 93–105); receptive to divergent views and sensitive to own biases [open-mindedness] (Scheffer & Rubenfeld, 2000, p. 358); understanding of the opinions of other people (Facione, 1990, pp. 2–13); honest in facing own	

(*Continued*)

Table 3. Continued.

Initial framework – Critical thinking competencies derived from a review of the literature	Critical thinking competencies identified by IQA focus groups in addition to those identified in initial framework
biases, prejudices, stereotypes, egocentric or socio-centric tendencies (Facione, 1990, pp. 2–13); has intellectual humility, which involves awareness of the limits of one's knowledge, including sensitivity to circumstances in which one's inborn egocentrism is likely to function self-deceptively; sensitivity to bias and prejudice in one's viewpoint (Paul, 1992, pp. 12–13); has a sense of intellectual justice, which is the willingness to entertain all viewpoints sympathetically and to assess them according to the same intellectual standards, without reference to one's own feelings or vested interests or the feelings or vested interests of one's friends, community or nation (Paul, 1992, pp. 12–13). • Flexible in considering alternatives and opinions (Facione, 1990, pp. 2–13); alert to alternatives (Ennis, 2015, pp. 32–45); has the capacity to adapt, accommodate, modify or change thoughts, ideas and behaviours [flexibility] (Scheffer & Rubenfeld, 2000, p. 358); willing to reconsider and revise views where honest reflection suggests that change is warranted (Facione, 1990, pp. 2–13); takes a position and changes a position when the evidence and reasons are sufficient (Ennis, 2015, pp. 32–45). • Fair-minded in appraising reasoning (Facione, 1990, pp. 2–13); has intellectual courage, which involves a willingness to face and fairly assess ideas, beliefs or viewpoints to which one has not given a serious hearing, regardless of strong negative reactions to them (Paul, 1992, pp. 12–13). • Prudent in suspending, making or altering judgements (Facione, 1990, pp. 2–13). • Demonstrates clarity in stating the question or concern (Facione, 1990, pp. 2–13). • Orderly in working with complexity (Facione, 1990, pp. 2–13); systematic (Thomas & Lok, 2015, pp. 93–105); deals with things in an orderly manner (Ennis, 2015, pp. 32–45). • Diligent in seeking relevant information (Facione, 1990, pp. 2–13). • Reasonable in selecting and applying criteria (Facione, 1990, pp. 2–13). • Takes care in focusing attention on the concern at hand (Facione, 1990, pp. 2–13); keeps in mind the basic concern in the context (Ennis, 2015, pp. 32–45). • Persistent despite difficulties (Facione, 1990, pp. 2–13); pursues a course with determination to overcome obstacles [perseverance] (Scheffer & Rubenfeld, 2000, p. 358); has intellectual perseverance, which involves the willingness to pursue intellectual insights and truths despite difficulties, obstacles and frustrations (Paul, 1992, pp. 12–13). • Applies precision to the degree permitted by the subject and the circumstances (Facione, 1990, pp. 2–13); seeks precision as the situation requires (Thomas & Lok, 2015, pp. 93–105); seeks as much precision as the situation requires (Ennis, 2015, pp. 32–45); tries to 'get it right' to the extent possible or feasible (Ennis, 2015, pp. 32–45). • Truth-seeking (Thomas & Lok, 2015, pp. 93–105); seeks the truth through sincere, honest processes, even if the results are contrary to one's assumptions and beliefs [intellectual integrity] (Scheffer & Rubenfeld, 2000, p. 358).	

(*Continued*)

Table 3. Continued.

Initial framework – Critical thinking competencies derived from a review of the literature	Critical thinking competencies identified by IQA focus groups in addition to those identified in initial framework
• Analytical (Thomas & Lok, 2015, pp. 93–105); considers the whole situation, including relationships, background and environment relevant to a situation [contextual perspective] (Scheffer & Rubenfeld, 2000, p. 358). • Intellectually inventive and can generate, discover or restructure ideas; imagine alternatives [creativity] (Scheffer & Rubenfeld, 2000, p. 358). • Has an insightful sense of knowing without conscious use of reason [intuition] (Scheffer & Rubenfeld, 2000, p. 358). • Has intellectual empathy, which involves a recognition of the need to put oneself imaginatively in the place of others in order to understand them (Paul, 1992, pp. 12–13). • Has intellectual good faith (integrity), which involves a recognition of the need to be true to one's own thinking, to be consistent in the intellectual standards that one applies, and to hold oneself to the same rigorous standards of evidence and proof as those to which one holds one's antagonists (Paul, 1992, pp. 12–13).	• Ethical behaviour. • Intrinsic motivation. • A positive attitude.

Source: Authors' own contribution based on various referenced work and IQA focus group results.

Good communication skills

Group 1 also linked good communication skills to critical thinking. Yusuf and Adeoye (2012, pp. 311–314) consider both critical thinking and communication skills as vital competencies. They are further of the view that good communication skills improve critical thinking among students, as good communication entails an interactive process of sharing facts, feelings and ideas. Good communication skills had not been specifically identified as a critical thinking competency from the literature review conducted for the study, and were thus added as a critical thinking cognitive skill in the final proposed framework in Table 3.

The ability to assess a situation and ask the right questions

Group 1 indicated that the ability to assess a situation and ask the right questions was a critical thinking skill and vital in the accounting profession. Interpretation was identified as a critical thinking cognitive skill in the initial framework (see Table 1). This involves the ability to comprehend and express the meaning or significance of a wide variety of experiences or situations, and the ability to ask and answer clarification questions and crucial critical thinking questions. Similarly, the ability to analyse (identify the intended and actual inferential relationships among statements, questions, concepts or other forms of representations) and the ability to examine (assess the credibility of statements or other representations) were also identified as cognitive skills in Table 1. These cognitive skills all allow a critical thinker to assess, interpret or examine a situation and to ask the right questions in a given situation to make inferences. The ability to assess a situation and ask the right questions, as identified by group 1, is thus in line with those cognitive skills already identified in the initial framework in Table 1.

Judgement

Group 1 identified judgement as a core discipline-specific skill, which they related to making informed decisions. According to Mezirow (1997, pp. 5–11), critical thinking requires one to make one's own judgements and interpretations as opposed to acting on the beliefs, judgements and feelings of others. Evaluation was identified as a cognitive skill in the literature review conducted for the study (see Table 1). This entails the ability to make judgements based on criteria and standards, as well as the ability to judge the credibility of a source or assumptions. Judgement, as a skill identified by group 1, is thus in line with the evaluation cognitive skill already identified in the initial framework in Table 1.

Making constant critical comparisons

Group 1 noted that the ability to make constant critical comparisons is a discipline-specific critical thinking skill. Baril et al. (1998, p. 393) are of the opinion that a critical thinker should be able to create an expectation of what the evidence should be and then compare the actual evidence with that expectation. Interpretation was identified as a critical thinking cognitive skill in Table 1. This skill involves the ability to recognise differences and similarities among things or situations, which requires the ability to compare. The ability to make constant critical comparisons is thus is in line with the interpretation cognitive skill as set out in the initial framework in Table 1.

Being systematic and organised

Group 1 identified the ability to be systematic and organised as a discipline-specific critical thinking skill. This is in line with the disposition of being orderly and systematic, as identified in Table 1, which involves the ability to work in an orderly fashion with complexity, and to deal with things in an orderly and systematic manner.

Following certain standards

The ability to adhere to certain standards was identified by group 1 as a discipline-specific critical thinking skill. From the literature review, evaluation was identified as a critical thinking cognitive skill (see Table 1). This involves the ability to make judgements based on certain criteria and standards, as well as the ability to judge according to established personal, professional or social rules or criteria. The ability to follow certain standards is thus in line with this critical thinking cognitive skill. Scheffer and Rubenfeld (2000, pp. 357–358) also assert that critical thinkers should be able to apply standards and to make judgements according to these standards.

Think outside the box

Group 2 specified the ability to think outside the box as a learning outcome associated with critical thinking. Baril et al. (1998, p. 396) assert that the ability to think outside the box is often linked to critical thinking, as critical thinkers have the ability to explore their own 'experience bank' to use relevant information in order to solve problems. Samarji (2014,

p. 1), too, notes that educators, trainers and employers often associate critical thinking with the ability to think outside the box and adopt what amounts to a 'helicopter view' of something. However, critical thinkers should generally be able to think inside, outside and across the box in a 'contextual manner' (Samarji, 2014, p. 1). The ability to think outside the box had not specifically been identified from the literature review conducted for the study, and was thus added as a critical thinking cognitive skill.

Ability to adapt thinking in different situations

Group 2 identified the ability to adapt one's thinking in different situations to come up with solutions to problems as a specific learning outcome associated with critical thinking. This is in line with the flexibility disposition identified from the literature review (see Table 1). Flexibility involves the ability to consider alternatives and opinions, as well as the capacity to adapt, accommodate, modify or change thoughts, ideas and behaviours. Baril et al. (1998, pp. 392–396) also assert that the ability to transfer knowledge from one situation to another is considered to be a characteristics of critical thinking.

Pervasive skills

Group 2 indicated that pervasive skills are a learning outcome associated with critical thinking. Barac and Du Plessis (2014, pp. 53–57) discuss the importance of developing pervasive skills among chartered accounting students. They also note that various surrogate terms are used for pervasive skills throughout the literature; these include professional skills, non-technical skills, transferable skills, soft skills, core skills and employability skills. However, group 2 did not indicate precisely which pervasive skills they associated with critical thinking. Pervasive skills in general were thus added under critical thinking cognitive skills (other) for the purposes of the study.

Problem-solving abilities

Group 2 specified that the ability to solve problems was a learning outcome they associated with critical thinking. Problem-solving and decision-making are some of the surrogate terms most often used for critical thinking (Turner, 2005, p. 275). Psychologists also regularly link critical thinking to problem-solving (Hepner, 2015, p. 77; Reed, 1998, p. 22). The interpretation cognitive skill, identified from the literature review (see Table 1), involves the ability to interpret problems as well as objective and subjective data accurately from common information sources. The analysis cognitive skill (see Table 1) also involves the ability to examine ideas or arguments in problems and in objective and subjective data, and to identify possible courses of action. This would in essence involve problem-solving abilities and is therefore in line with the cognitive skills already identified in the initial framework (see Table 1).

Discretionary thinking

Discretionary thinking was identified by group 2 as a learning outcome associated with critical thinking. Critical thinking involves self-disciplined, self-directed, reasoned and

focused thinking (Brunt, 2005, pp. 60–61; Ennis, 1985, p. 45; Facione, 1990, pp. 1–18; Halpern, 1998, pp. 449–451; Kataoka-Yahiro & Saylor, 1994, pp. 351–353; Paul, 1992, pp. 9–10). Critical thinking is also reflective and reasonable thinking aimed at making decisions about what to believe or do (Ennis, 1985, p. 45). Critical thinking essentially requires discretion and flexibility. Flexibility involves the ability to consider alternatives and opinions, as well as the capacity to adapt, accommodate, modify or change thoughts, ideas and behaviours. Discretionary thinking is thus in line with the flexibility disposition identified in the initial framework (see Table 1).

Ability to interrogate information

The ability to interrogate information was identified by group 2 as a learning outcome associated with critical thinking. This ability is in line with the evaluation cognitive skill identified from the literature review (see Table 1). It involves the ability to evaluate information to ascertain its probable trustworthiness and relevance, and the ability to assess the credibility of statements and other representations.

Critical thinking competency framework for accounting students

In this study, the critical thinking competencies required of accounting students were explored through a review of the literature. These critical thinking competencies were firstly identified from seminal works on critical thinking, where after they were progressively analysed by the researchers to group similar concepts. The critical thinking competencies were summarised in Table 1 as an initial critical thinking competency framework. The principles of IQA were then followed to obtain the views of three groups of participants on the critical thinking competencies required of accounting students. These critical thinking competencies were summarised in Table 2. The critical thinking competencies provided by the IQA focus groups were then analysed further by the researchers and compared with the competencies identified as part of the literature review to ascertain whether the participants had identified similar critical thinking competencies, or whether certain competencies that were specific to the accounting education context needed to be added to the final framework. This process allowed the researchers to provide a framework that included the critical thinking competencies required of accounting students both from existing literature and from the perspectives of educational experts, educators in accountancy programmes and accounting students (see Table 3). The critical thinking competencies in this competency framework are categorised into critical thinking cognitive skills (attributes or abilities) and critical thinking dispositions (habits of the mind), which are considered to be the most generally accepted dimensions of critical thinking.

Conclusion

It is anticipated that the accounting profession will undergo significant changes in the next few years. Significant challenges in the profession are being brought about mainly by rapid developments in smart and digital technologies, globalisation and new forms of regulation, and it is up to professional organisations, members and educational

institutions to respond to these challenges. Unfortunately, universities seem to be struggling with the transformation of their current programmes in order to develop the range of skills and knowledge that their students require to meet future needs (Islam, 2015, p. 1).

To equip accounting educators with a better understanding of the critical thinking competencies required of their students in order to meet the changing need of the accounting profession, this study set out to provide a framework unifying the critical thinking competencies required of accounting students both from existing literature and from the perspectives of educational experts, educators in accountancy programmes and accounting students. The introduction to this paper mentioned that a number of frameworks for critical thinking exist in the literature. However, these frameworks do not provide a comprehensive list of the critical thinking competencies required of accounting students as identified both from seminal works in the literature and from the perspectives of educational experts, educators in accountancy programmes and accounting students. Through a review of the literature, competencies in critical thinking were identified and synthesised into an initial scholarly, substantive framework for critical thinking competencies (see Table 1). Table 2 represented critical thinking competencies as identified by the participants in the IQA focus groups. The critical thinking competency framework for accounting students (see Table 3) provides a comprehensive list of critical thinking cognitive skills (attributes or abilities) and dispositions (habits of the mind).

The framework proposed in this study could provide guidance to accounting educators in their quest to develop critically thinking accounting graduates through curriculum design and the revision of academic accounting programmes at higher education institutions. It could furthermore provide guidance for the enhancement of professional accounting bodies' competency frameworks and lay the foundation for future work on the assessment of critical thinking competencies, for example through critical thinking assessment rubrics.

The introduction to this paper also mentioned that there does not seem to be a clear and unifying definition of critical thinking, which is a concern in accounting education. The following definition based on the literature reviewed in this paper and the competencies identified as part of this study (see Table 3) might be a starting point for educators in the field of accounting: *Critical thinking involves purposeful and reflective judgement generally aimed at making informed decisions. It involves certain cognitive skills (e.g. the ability to interpret, analyse, evaluate, infer, explain and self-regulate) and also certain dispositions (e.g. being inquisitive, self-confident, open-minded, ethical, orderly and systematic, and having intrinsic motivation and a positive attitude).*

Further research could focus on the practical implementation of the critical thinking competency framework for accounting students and the assessment of the critical thinking competencies. The framework is conceptual and still contains various generic competencies that could be adapted further to address more specific needs of various subject areas, such as auditing, taxation, financial accounting and management accounting. Future studies could also explore the critical thinking competencies by means of larger, more robust studies or other research methods in order to address any possible limitations of this study. The definition proposed above is considered to be only a starting point and could be further adapted.

It is important to bear in mind the limitations of the study. The findings of this study cannot be extrapolated to the entire population as it only pertains to the views and experiences of those participants involved in the IQA focus groups. The sample of the IQA focus groups could also be seen as a limitation. Even though three focus groups were considered adequate for the purposes of the study, future studies could include focus groups with other stakeholders from auditing firms, professional accounting bodies and so on. Furthermore, the developed framework needs to be tested in practice to allow for future input by industry. Participants in all three focus groups were also purposively recruited from the Gauteng province, South Africa, for logistical reasons. Each focus group consisted of a limited number of participants, although the number of participants was considered adequate.

Note

1. In the context of this study, accounting students refer to students studying towards becoming professional accountants and auditors. Accounting degrees generally include, among others, modules on taxation, auditing, financial accounting, management accounting and ethics.

Disclosure statement

No potential conflict of interest was reported by the author(s).

ORCID

E. A. J. Terblanche http://orcid.org/0000-0003-1178-1407
B. De Clercq http://orcid.org/0000-0003-4314-2255

References

Abrami, P. C., Bernard, R. M., Borokhovski, E., Waddington, D. I., Wade, C. A., & Persson, T. (2015). Strategies for teaching students to think critically: A meta-analysis. *Review of Educational Research*, *85*(2), 275–314. https://doi.org/10.3102/0034654314551063

Albrecht, W. S., & Sack, R. J. (2000). *Accounting education: Charting the course through a perilous future. Accounting education series vol. no. 16*. American Accounting Association.

American Accounting Association. (2012). *The pathways commission: Charting a national strategy for the next generation of accountants*. Retrieved January 20, 2021, from https://www.iaesb.org/system/files/meetings/files/Agenda20Item209-120-20Pathways20Commission20Final%20Report.pdf

American Institute of Certified Public Accountants (AICPA). (2018). *The AICPA pre-certification core competency framework*. Retrieved October 5, 2020, from https://www.aicpa.org/content/dam/aicpa/interestareas/accountingeducation/resources/downloadabledocuments/aicpa-pre-certification-core-compentency-framework.pdf

Andersen, N. (2018). Young auditors left with ethical questions after KPMG debacle. Retrieved August 7, 2018, from https://www.thesouthafrican.com/young-auditors-left-with-ethical-questions-after-kpmg-debacle/

Anderson, L. W., & Krathwohl, D. R. (2001). *A taxonomy for learning, teaching and assessing: A revision of Bloom's taxonomy of educational objectives*. Longman.

Association to Advance Collegiate Schools of Business (AACSB). (2018). *2018 Eligibility procedures and accreditation standards for accounting accreditation*. Retrieved January 20, 2021,

from https://www.aacsb.edu/-/media/aacsb/docs/accreditation/accounting/standards-and-tables/2018-accounting-standards.ashx?la=en&hash=8DCDA6CE3B0CEF6AB82D39CBF53995DA96111196

Atabaki, A. M. S., Keshtiaray, N., & Yarmohammadian, M. H. (2015). Scrutiny of critical thinking concept. *International Education Studies*, *8*(3), 93–102. https://doi.org/10.5539/ies.v8n3p93

Awayiga, J. Y., Onumah, J. M., & Tsamenyi, M. (2010). Knowledge and skills development of accounting graduates: The perceptions of graduates and employers in Ghana. *Accounting Education*, *19*(1–2), 139–158. https://doi.org/10.1080/09639280902903523

Bailin, S., Case, R., Coombs, J. R., & Daniels, L. B. (1999). Common misconceptions of critical thinking. *Journal of Curriculum Studies*, *31*(3), 269–283. https://doi.org/10.1080/002202799183124

Barac, K. (2017). *Critical thinking: A prized commodity*. Retrieved September 26, 2017, from https://www.bbrief.co.za/2017/09/19/critical-thinking-a-prized-commodity/

Barac, K., & Du Plessis, L. (2014). Teaching pervasive skills to South African accounting students. *Southern African Business Review*, *18*(1), 53–79. https://doi.org/10.25159/1998-8125/5645

Baril, C. P., Cunningham, B. M., Fordham, D. R., Gardner, R. L., & Wolcott, S. K. (1998). Critical thinking in the public accounting profession: Aptitudes and attitudes. *Journal of Accounting Education*, *16*(3–4), 381–406. https://doi.org/10.1016/S0748-5751(98)00023-2

Bensley, D. A., & Spero, R. A. (2014). Improving critical thinking skills and metacognitive monitoring through direct infusion. *Thinking Skills and Creativity*, *12*, 55–68. https://doi.org/10.1016/j.tsc.2014.02.001

Bloom, B. S., Krathwohl, D. R., & Masia, B. B. (1956). *Taxonomy of educational objectives*. Longman Group.

Botha, N. (2019). *The future professional accountant in 4IR*. Retrieved September 3, 2019, from https://www.bizcommunity.com/Article/196/511/194420.html

Brunt, B. A. (2005). Critical thinking in nursing: An integrated review. *The Journal of Continuing Education in Nursing*, *36*(2), 60–67. https://doi.org/10.3928/0022-0124-20050301-05

Cloete, M. (2018). The impact of an integrated assessment on the critical thinking skills of first-year university students. *Accounting Education*, *27*(5), 479–494. https://doi.org/10.1080/09639284.2018.1501717

Daniel, B. R. (2013). *Defining critical thinking for the 21st century world language classroom* [Master's thesis, Brigham Young University]. https://scholarsarchive.byu.edu/cgi/viewcontent.cgi?article=5287&context=etd

Davies, M., & Barnett, R. (2015). Questions, context and challenges. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 1–26). Palgrave Handbooks.

Du Preez, H. (2015). *A construction of the fundamental principles of taxation* [Doctoral dissertation, University of Pretoria]. https://repository.up.ac.za/bitstream/handle/2263/57171/DuPreez_Construction_2016.pdf?sequence=1

Duron, R., Limbach, B., & Waugh, W. (2006). Critical thinking framework for any discipline. *International Journal of Teaching and Learning in Higher Education*, *17*(2), 160–166. Retrieved October 15, 2020, from https://www.isetl.org/ijtlhe/pdf/IJTLHE55.pdf?pagewanted=all

Dwyer, C. P., Hogan, M. J., & Stewart, I. (2014). An integrated critical thinking framework for the 21st century. *Thinking Skills and Creativity*, *12*, 43–52. https://doi.org/10.1016/j.tsc.2013.12.004

Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. *Educational Leadership*, *43*(2), 44–48. Retrieved May 24, 2020, from https://jgregorymcverry.com/readings/ennis1985assessingcriticalthinking.pdf

Ennis, R. H. (2015). Critical thinking: A streamlined conception. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 31–47). Palgrave Handbooks.

Facione, P. A. (1990). Critical thinking: A statement of expert consensus for purposes of educational assessment and instruction - executive summary of "The Delphi report". Retrieved May 20, 2016, from https://www.insightassessment.com/wp-content/uploads/DEX-2014-reprinting.pdf

Facione, P. A. (2000). The disposition toward critical thinking: Its character, measurement, and relationship to critical thinking skill. *Informal Logic*, *20*(1), 61–84. https://doi.org/10.22329/il.v20i1.2254

Facione, P. A. (2015). *Critical thinking: What it is and why it counts*. Retrieved August 10, 2015, from https://www.maximusveritas.com/wp-content/uploads/2015/08/Critical-Thinking.pdf

Fasko, D. (1994). Critical thinking and moral reasoning: Can you have one without the other? *Annual meeting of the Mid-South Educational Research Association* [Paper presentation]. Educational Resources Information Center (ERIC), Nashville.

Fisher, G., & Scott, I. (2011). Closing the skills and technology gap in South Africa: Background paper 3 – The role of higher education in closing the skills gap in South Africa. Retrieved November 18, 2016, from https://www.glenfisher.ca/downloads/files/Higher Education in SA.pdf

Halpern, D. F. (1998). Teaching critical thinking for transfer across domains: Dispositions, skills, structure training, and metacognitive monitoring. *American Psychologist*, *53*(4), 449–455. https://doi.org/10.1037/0003-066X.53.4.449

Hepner, M. R. (2015). The erosion of critical thinking development in post-secondary education: The need to return to liberal education. In S. Wisdom & L. Leavitt (Eds.), *Handbook of research on advancing critical thinking in higher education* (pp. 68–96). IGI Global.

Huber, C. R., & Kuncel, N. R. (2016). Does college teach critical thinking? A meta-analysis. *Review of Educational Research*, *86*(2), 431–468. https://doi.org/10.3102/0034654315605917

Hunton, J. E. (2002). Blending information and communication technology with accounting research. *Accounting Horizons*, *16*(1), 55–67. https://doi.org/10.2308/acch.2002.16.1.55

Hussein, A. (2017). Importance of generic skills in accounting education: Evidence from Egypt. *International Journal of Accounting and Financial Reporting*, *7*(2), 2162–3082. https://doi.org/10.5296/ijafr.v7i2.11782

International Accounting Education Standards Board (IAESB). (2019). *Handbook of International Education Pronouncements.* Retrieved October 5, 2020, from https://www.ifac.org/system/files/publications/files/Handbook-of-International-Education-Standards-2019.pdf

International Federation of Accountants (IFAC). (2020). *Advancing accounting profession.* Retrieved October 5, 2020, from https://education.ifac.org/index.html

Islam, M. A. (2015). Future of accounting profession: Three major changes and implications for teaching and research. Retrieved November 4, 2019, from https://www.ifac.org/knowledge-gateway/preparing-future-ready-professionals/discussion/future-accounting-profession-three-major-changes-and-implications-teaching-and-research

Jones, A. (2015). A disciplined approach to critical thinking. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 169–182). Palgrave Handbooks.

Kataoka-Yahiro, M., & Saylor, C. (1994). A critical thinking model for nursing judgment. *Journal of Nursing Education*, *33*(8), 351–356. https://doi.org/10.3928/0148-4834-19941001-06

Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence from student perceptions and employer expectations. *Accounting and Finance*, *48*(2), 279–300. https://doi.org/10.1111/j.1467-629x.2007.00245.x

Kimmel, P. (1995). A framework for incorporating critical thinking into accounting education. *Journal of Accounting Education*, *13*(3), 299–318. https://doi.org/10.1016/0748-5751(95)00012-B

Krueger, R. A., & Casey, M. A. (2009). *Focus groups: A practical guide for applied research* (4th ed.). SAGE.

Lim, Y.-M., Lee, T. H., Yap, C. S., & Ling, C. C. (2016). Employability skills, personal qualities, and early employment problems of entry-level auditors: Perspectives from employers, lecturers, auditors, and students. *Journal of Education for Business*, *91*(4), 185–192. https://doi.org/10.1080/08832323.2016.1153998

Low, M., Samkin, G., & Liu, C. (2013). Accounting education and the provision of soft skills: Implications of the recent NZICA CA academic requirement changes. *e-Journal of Business Education & Scholarship of Teaching*, *7*(1), 1–33. Retrieved February 4, 2020, from https://files.eric.ed.gov/fulltext/EJ1167341.pdf

Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in Educational Research*, *16*(2), 193–205. Retrieved March 14, 2020, from http://www.iier.org.au/iier16/mackenzie.html

Melillo, N. (2010). What is the relationship between critical thinking and ethics? Retrieved August 7, 2018, from https://www.triadsearchmarketing.com/what-is-the-relationship-between-critical-thinking-and-ethics/

Mezirow, J. (1997). Transformative learning: Theory to practice. *New Directions for Adult and Continuing Education*, *74*(74), 5–12. https://doi.org/10.1002/ace.7401

Nair, G. G., & Stamler, L. L. (2013). A conceptual framework for developing a critical thinking self-assessment scale. *Journal of Nursing Education*, *52*(3), 131–138. https://doi.org/10.3928/01484834-20120215-01

Nelson, L. P., & Crow, M. L. (2014). Do active-learning strategies improve students' critical thinking? *Higher Education Studies*, *4*(2), 77–90. https://doi.org/10.5539/hes.v4n2p77

Nienaber, S. G. (2013). *The expectation gap between taxpayers and tax practitioners in a South African context* [Doctoral dissertation, University of Pretoria]. file:///C:/Users/terbleaj/Downloads/Nienaber_Expectation_2013.pdf

Northcutt, N., & McCoy, D. (2004). *Interactive qualitative analysis: A systems method for qualitative research*. SAGE.

Paul, R. (1992). Critical thinking: What, why and how. *New Directions for Community Colleges*, *77*(77), 3–24. https://doi.org/10.1002/cc.36819927703

Paul, R., & Elder, L. (2005). *Critical thinking competency standards: Standards, principles, performance indicators, and outcomes*. Retrieved May 3, 2016, from http://www.criticalthinking.org/resources/PDF/CT-competencies2005.pdf

Plant, K. (2015). *A workplace learning framework for developing entry-level internal audit professionals* [Doctoral dissertation, University of Pretoria]. https://repository.up.ac.za/bitstream/handle/2263/52998/Plant_Workplace_2015.pdf?sequence=1&isAllowed=y

Reed, J. H. (1998). *Effect of a model for critical thinking on student achievement in primary source document analysis and interpretation, argumentative reasoning, critical thinking dispositions, and history content in a community college history course* [Doctoral dissertation, University of South Florida]. https://www.criticalthinking.org/resources/JReed-Dissertation.pdf

Robertson, C. A. (2015). *Leadership development for technical and vocational education and training college leaders in South Africa: A post-graduate curriculum framework* [Doctoral dissertation, Stellenbosch University]. http://ahero.uwc.ac.za/index.php?module=cshe&action=downloadfile&fileid=184090925146558343055 25

Saadé, R. G., Morin, D., & Thomas, J. D. E. (2012). Critical thinking in E-learning environments. *Computers in Human Behavior*, *28*(5), 1608–1617. https://doi.org/10.1016/j.chb.2012.03.025

Sahin, M., & Dogantay, H. (2018). Critical thinking and transformative learning. *Journal of Innovation in Psychology, Education and Didactics*, *22*(1), 103–114. Retrieved March 14, 2020, from https://files.eric.ed.gov/fulltext/ED593584.pdf

Samarji, A. (2014). *Critical thinking: Thinking inside or outside the box?* Retrieved August 10, 2018, from https://www.linkedin.com/pulse/20140904144745-86582565-critical-thinking-thinking-inside-or-outside-the-box

Scheffer, B. K., & Rubenfeld, M. G. (2000). A consensus statement on critical thinking in nursing. *Journal of Nursing Education*, *39*(8), 352–359. https://doi.org/10.3928/0148-4834-20001101-06

Simpson, E., & Courtney, M. (2002). Critical thinking in nursing education: A literature review. *International Journal of Nursing Practice*, *8*(2), 89–98. https://doi.org/10.1046/j.1440-172x.2002.00340.x

Sinkovics, R. R., & Alfoldi, E. A. (2012). Progressive focusing and trustworthiness in qualitative research: The enabling role of computer-assisted qualitative data analysis software (CAQDAS). *Management International Review*, *52*(6), 817–845. https://doi.org/10.1007/s11575-012-0140-5

South African Institute of Chartered Accountants (SAICA). (2018). *Competency framework detailed guidance for the academic programme*. Retrieved October 5, 2020, from https://www.saica.co.za/Portals/0/LearnersStudents/documents/CompetencyFramework2019b.pdf

South African Institute of Chartered Accountants (SAICA). (2019). *Proposed SAICA competency framework CA2025*. Retrieved February 17, 2020, from https://ca2025.co.za/wp-content/uploads/2020/03/DRAFT-Competency-framework-Summary-for-website-30-March-2020.pdf

Thomas, K., & Lok, B. (2015). Teaching critical thinking: An operational framework. In M. Davies & R. Barnett (Eds.), *The Palgrave handbook of critical thinking in higher education* (pp. 93–106). Palgrave Handbooks.

Turner, P. (2005). Critical thinking in nursing education and practice as defined in the literature. *Nursing Education Perspectives*, *26*(5), 272–277. PMID: 16295305. https://doi.org/10.1043/1536-5026

Van Romburgh, H., & Van der Merwe, N. (2015). University versus practice: A pilot study to identify skills shortages that exist in first-year trainee accountants in South Africa. *Industry and Higher Education*, *29*(2), 141–149. https://doi.org/10.5367/ihe.2015.0244

Vilen, A. (2015). *Empathy + critical thinking = Compassionate action*. Retrieved August 10, 2018, from https://blogs.edweek.org/edweek/learning_deeply/2015/09/empathy_critical_thinking_compassionate_action.html

Wiek, A., Keeler, L. W., & Redman, C. L. (2011). Key competencies in sustainability: A reference framework for academic program development. *Sustainability Science*, *6*(2), 203–218. https://doi.org/10.1007/s11625-011-0132-6

World Economic Forum. (2016). *New vision for education: Fostering social and emotional learning through technology. Industry Agenda*. Retrieved May 9, 2018, from https://www3.weforum.org/docs/WEF_New_Vision_for_Education.pdf

Yusuf, F. A., & Adeoye, E. A. (2012). Developing critical thinking and communication skills in students: Implications for practice in education. *African Research Review*, *6*(1), 311–324. https://doi.org/10.4314/afrrev.v6i1.26