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Barriers to the development of integrated thinking skills of prospective chartered accountants

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Background: Globally professional accounting bodies expect of higher education institutions to develop integrated thinking skills in prospective chartered accountants. There are, however, many barriers in the way of both lecturers and students to achieve the development of integrated thinking skills.

Aim: This article sought to identify the most significant barriers lecturers and students face when developing integrated thinking skills in prospective chartered accountants during higher education.

Setting: Interviews were conducted and an online questionnaire ministered.

Method: The mixed-method approach and a pragmatist paradigm are utilised. Both questionnaires and interviews were used to collect primary data. A triangulation between the quantitative data, qualitative data, and literature had been performed.

Results: The three most significant barriers that lecturers face in developing integrated thinking skills are the volume of technical content, lack of expertise, and large classroom sizes. The three most significant barriers that students face in developing integrated thinking skills are students being overburdened with the technical content of the syllabus, not having been exposed to integrated thinking prior to higher education, and having to study in a second language.

Conclusion: The most significant barriers for both lecturers and students in the development of integrated thinking skills during the higher education of prospective chartered accountants are identified in this study.

Contribution: While much has been published on the barriers to developing integrated thinking skills, a limited amount of literature addresses the specific barriers that exist in the accounting education field.

Keywords: barriers; higher education; integrated thinking; lecturers; chartered accountant; students.

Introduction

Leading educational academics believe that in order to be successful in the workplace of the 21st century, today's students must be taught how to be highly flexible, integrative, and adaptive life-long learners (Newell 1999; Tsiligiris & Bowyer 2021; Wang & Torrisi-Steele 2021). These students must be people who can keep up with the fast-changing demands of new knowledge, developing job roles, and shifting work settings (Peet et al. 2011). For most of the 20th and 21st centuries, higher education has been centred on a discipline-based approach to learning. This created boundaries in student learning in the form of isolated subjects and concepts (Klein 2006). Disciplinary scholarship tended to focus on abstraction rather than the solving of specific problems (Abbott 1988). This need for specialisation arose during the industrial era in which individuals were expected to work within a specific domain (Ashby & Exter 2019). The knowledge explosion significantly increased the number of specialties and fields, which made the fragmentation issue worse and accelerated the need for making connections (Holley 2017; Klein 2005). Sadly, the discipline-based approach in higher education has remained mostly unchanged (Holley 2017). Siloed academic disciplines create barriers that inhibit students' abilities to solve problems, as the problems of the world are not organised according to neat academic specialisations (Gaff 1989). The teaching of integrated thinking abilities is crucial in overcoming the previous century's knowledge fragmentation in order to provide a grounded education that is current and suited to contemporary living (Boix Mansilla 2008). The teaching of integrated thinking skills has been used in research in the medical field (Rosch 1998), education (McLoughlin & Mynard 2009),

psychology (Dryden 1992), nursing science (Westra & Rodgers 1991), and engineering (Benson & Dresdow 2009) long before it gained traction in the accounting education field (Schörger & Sewchurran 2015).

The International Integrated Reporting Council (IIRC) coined the skill of integrated thinking from an accounting perspective by seeing it as a precursor of integrated reporting and placed the concept of integrated thinking skills firmly on the global professional accounting map. However, the IIRC refers to integrated thinking from an organisational perspective and not from a higher educational perspective (IIRC 2021). The majority of academic research on integrated thinking is focused on the concept only at organisational level (Busco, Granà & Achilli 2021; Dumay & Dai 2017; Ecim & Maroun 2022; Guthrie & Parker 2016; Maroun, Ecim & Cerbone 2022), while there is a significant gap in research on the development of integrated thinking at the individual level (Lorson & Paschke 2015; McGuigan et al. 2020). Despite the foregoing gap in the literature, many professional accounting bodies are now looking to higher education institutions to assist students who want to be chartered accountants in acquiring these integrated thinking abilities. The South African Institute for Chartered Accountants (SAICA) is one of the professional accounting bodies who has moved away from the siloed approach of education and developed a new Competency Framework in which the development of critical thinking and integrated thinking skills is emphasised (SAICA 2021).

One of the most cited articles that sets out what higher education institutions should be striving towards, states the following:

> One of the greatest challenges in higher education is to promote students' ability to integrate their learning over time and across contexts. […] The capacity to connect is central …whether focused on discovery and creativity, integrating and interpreting knowledge from disciplines, applying knowledge through real-world engagements, [*integrated learning*] builds intentional learners … and the habits of mind that prepare students to make informed judgments in the conduct of personal, professional, and civic life. (Huber & Hutchings 2004:1)

This is a significant expectation for any higher education institution to achieve. There is also a widespread misunderstanding that students can generate significant connections between disciplines and contexts on their own (Graff 1994; Higgs, Kilcommins & Ryan 2010). However, research has demonstrated that a deliberate teaching strategy is essential to enable students to think holistically (Dean et al. 2020; Huber & Hutchings 2004). Inter-disciplinary synthesis and integrated thinking abilities, according to Boix Mansilla (2016), involves conscious training; it is not merely an add-on or a process that occurs on its own. It is clear from the literature that the endeavour to develop integrated thinking skills during higher education is a complex undertaking with many barriers that stand in its way (Peet et al. 2011). The purpose of this study is to identify the most significant barriers in the way of lecturers and students, respectively, to develop integrated thinking skills in prospective chartered accountants during higher education. Although much research has been performed on the general barriers in the way of developing integrated thinking, there is a void in the literature in that the barriers – specifically in the accounting education field – have not been appropriately explored. In this study the barriers experienced by lecturers and students, specifically during the academic programmes of prospective chartered accountants in South Africa, are explored.

Literature review

In this section the barriers to and benefits of integrated thinking identified in the existing literature are set out.

Barriers and critique against integrated thinking from an organisational perspective

The focus of this study is to identify the most significant barriers that prohibit the development of integrated thinking skills during the academic programmes of prospective chartered accountants in South Africa. It is, however, valuable to understand that the implementation of integrated thinking skills from an organisational perspective also has many barriers and critique against it. Although there seems to be strong support for and appreciation of the benefits of integrated thinking within an organisational context, there is criticism against it from some researchers and business practitioners (Dumay & Dai 2017; Oliver, Vesty & Brooks 2016; Velte & Stawinoga 2017; World Intellectual Capital Initiative 2013). Integrated thinking requires chartered accountants to think in an integrated way, inside interconnected structures, and this poses a major challenge as it requires more lateral thinking to replace the traditionally accepted linear reasoning (World Intellectual Capital Initiative 2013). In the influential article, published by Dumay and Dai (2017), it is questioned whether it is in fact necessary to break down silos across all organisational functions, as these silos promote independent thought. Velte and Stawinoga (2017) state that the integrated thought process is very expensive, and that its true costs and benefits are still unknown. The authors also call for more extensive research to be performed into the cost of implementing integrated thinking within an organisation (Velte & Stawinoga 2017).

The IIRC acknowledges that there may be external barriers creating challenges to integrated thinking. Shareholders have become used to the Friedman mentality which exclusively focuses on maximising profits to provide maximum returns to shareholders (IIRC 2020b). For shareholders it will take getting used to the fact that organisations now follow a multiple stakeholder approach and try to create long-term value for all stakeholders. Examples of multiple stakeholders of organisations include, but are not limited to, customers, future generations, government, shareholders, providers of finance, trade associations, civil society, NGO's, etc. (IIRC 2020a). The IIRC recognises the following three types of internal barriers to integrated thinking (IIRC 2020b):

- *Strategic* – deficiency in leadership and inadequate strategy development and implementation;

- *Organisational* – high level of complexity, as collaboration between role-players may be negatively affected by differences in language, opinion, and culture;
- *Analytical* – inadequate tools to measure the success of integrated thinking, difficulty in establishing comparability (for example comparing non-financial factors with financial factors), arduousness in determining causality between financial and non-financial factors.

The benefits of an integrated inter/trans-disciplinary education

An integrated inter/trans-disciplinary education benefits both students and lecturers (Ashby & Exter 2019). Students who participate in inter/trans-disciplinary activities improve their higher-order metacognitive abilities, including critical thinking, creativity, decision-making skills, communication skills, and the capacity to evaluate issues from several disciplinary perspectives (Ashby & Exter 2019; Cotantino et al. 2010; Ignjatović 2020). With an integrated inter/trans-disciplinary education, students realise that in the real world, knowledge is applied in an integrated manner rather than in discrete bits and pieces (Summers 2005). Students, participating in an inter/trans-disciplinary approach to higher education, also demonstrate a greater tolerance for ambiguity, enhanced metacognition skills, and a sensitivity to prejudice and bias (Holley 2017). An integrated inter/trans-disciplinary approach also benefits lecturers, as they have more academic freedom to explore and analyse their own disciplines (Cruickshank 2008).

The barriers and challenges for lecturers and academic institutions to develop integrated thinking skills

Despite the many benefits of an integrated inter-disciplinary teaching and learning model, there are most definitely challenges for the successful implementation thereof (Ashby & Exter 2019; Ignjatović 2020). The responsibility of creating a learning environment which encourages and enables students to think critically, connect the dots, and think in an integrated manner, lies completely with the lecturer and the higher education institution (Mangan & Fitzgerald 2015). Strong leadership is thus required (Latham, Latham & Whyte 2004; Pellmar & Eisenberg 2000). It is unreal to think that students can simply be taught critical thinking skills, and that they will then also be able to think efficaciously across disciplines (Wallace 2011). The organisation and success of an integrated and inter-disciplinary curriculum is greatly influenced by the context and culture of the institution (Holley 2017). Traditional credit systems seem to reinforce academic silos (Dumay & Dai 2017; Graff 1994), whereas the impact that co-curricular and informal learning opportunities have on students' learning is often undervalued by institutions (Peet et al. 2011). The limitation in terms of maximum credit hours, that higher education institutions are bound by, also restrict the ability to expand the curriculum to incorporate integrated thinking and inter-disciplinarity (Woodside et al. 2020).

The development of an integrated curriculum is regarded as time consuming, complex, and often underestimated (Peet et al. 2011). The funding of integrated programmes is also problematic in higher education institutions (Morse et al. 2007). To develop a successfully integrated curriculum, institutional leadership is required, as well as the necessary resources (Huber & Hutchings 2004). Training to prepare lecturers for an integrated curriculum is crucial (McNair & Garrison 2013), as most lecturers who have been trained within their siloed disciplines are now required to cross disciplinary boundaries and move out of their own areas of expertise (Peet et al. 2011; Welch-Devine et al. 2014). The literature is quite clear that with the introduction of a new pedagogical outcome, all lecturers need training (Ghio & McGuigan 2020; Hatcher 2006). Many lecturers do not even understand what integrated learning and thinking is, let alone how to teach and assess it (Booth, McLean & Walker 2009). Often lecturers are not trained to design and carry out inter-disciplinary activities and they need extensive comprehension of inter-disciplinarity in order to successfully teach in an integrated and inter-disciplinary manner (Ashby & Exter 2019; Baker & Daumer 2015). Lecturers' excitement at the beginning of an integrated and inter-disciplinary project may easily deflate if they do not understand the complexities involved in such a strategy (Bossio et al. 2014). Literature also indicates the following barriers for lecturers in developing integrated thinking skills in students: the general unwillingness of lecturers to teach in an integrative manner (Peet et al. 2011), their lack of expertise (Ashby & Exter 2019), and the sheer volume of technical content (De Villiers & Venter 2010). According to Strauss-Keevy (2012), limited contact time with students and large classroom sizes also inhibit the development of pervasive skills in accounting education.

When implementing an integrated curriculum, change management is of utmost importance and, sadly, literature has strongly indicated that educational change is complex (Graff 1994) and often fails due to a lack of change management. It is crucial for the management of the faculty and accounting school/department to spend time on and pay attention to change management (Mangan & Fitzgerald 2015). This will include getting the buy-in from lecturers, as well as empowering them with the necessary training, and supporting them in becoming lecturers who promote integrated learning (Stevenson et al. 2005). When establishing successfully integrated and inter-disciplinary curricula, a strong facilitator is required, someone who fully understands the field and is known and respected by all – students and lecturers alike (Bossio et al. 2014).

Planning integrated learning experiences frequently involves unseen work that is unlikely to be acknowledged during promotion procedures (Huber et al. 2007). For limited resources and faculty time, integrative activities may be regarded as competing with traditional programmes (Mach, Burke & Ball 2008). Given these obstacles, it is not unexpected that a significant portion of the literature focuses on the

difficulties educators encounter while attempting to redesign their curricula to be more integrated (Peet et al. 2011).

Issues of lecturers' workloads, interest, and willingness to let go of their discipline-specific and competitive turf issues may also be barriers for successful implementation (Taylor, Watson & Schwaibold 2015). The substantial rewards and benefits of discipline specialisation may also stand in the lecturers' way of embracing an integrated inter-disciplinary programme (Pharo et al. 2014). As disciplines of knowledge rely on more complicated topics, techniques, and jargons, communication beyond a lecturer's home discipline has gotten more challenging and the uncertainty of entering new boundaries can be intimidating, showing ignorance while heightening anxiety and defensiveness (Frost & Jean 2003). Many lecturers choose to protect their academic and intellectual territory at the expense of integrated and inter-disciplinary teaching and learning (Frost & Jean 2003; Pellmar & Eisenberg 2000). Collaborating with fellow lecturers requires an understanding and appreciation of both the value and the limitations of each discipline involved (Pellmar & Eisenberg 2000).

Finally, the assessment and measurement of inter-disciplinary abilities and integrated thinking are notoriously difficult (Lim et al. 2012; McNair & Garrison 2013; Newell & Luckie 2019), while a study in Australia indicated that only a minority of lecturers are willing – as well as able – to undertake this endeavour effectively (Sin & McGuigan 2014). Assessment commands the higher education experience for students and effectively reinforces what they have learnt and achieved (Brown & Knight 1994). As it affects how time will be used, assessment also reveals what matters to students. According to a 2008 study, students will not devote more than 10% of their effort to academic content that will not be graded (Lombardi 2008). Assessment in accounting education continues to be characterised by the high-stakes summative testing of knowledge for certification purposes rather than competency-based assessment (De Villiers & Venter 2010; Janse van Rensburg, Coetzee & Schmulian 2022), notwithstanding the transition to competency-based education for chartered accountants. Summative assessments are frequently detached from reality and founded on fictitious, frequently oversimplified examples (Wiewiora & Kowalkiewicz 2019). The nature of assessment must be changed urgently from merely summative techniques to competency-based evaluations for learning (Janse van Rensburg et al. 2022).

The barriers and challenges for students to develop integrated thinking skills

Understanding how students learn across various integrative learning domains has received far less attention than the barriers that lecturers face in developing integrated thinking skills (Peet et al. 2011). While disciplinary boundaries have enabled greater depth of knowledge and advancement in specific subjects, they have also alienated students from collaborative conversation and involvement (Holley 2009). Language restrictions are often cited as a barrier to developing integrated thinking skills (Graff 1994; Morse et al. 2007). Many students experience language difficulties due to not studying in their first language (Van der Merwe 2014). Students are often overwhelmed by the volume of technical content that they need to master (De Villiers & Venter 2010). Students also have a tendency to focus on their majors to the exclusion of other fields of human knowledge (Graff 1994; Morse et al. 2007). They do not see the use of service subject requirements and spend limited time on them solely to get these out of the way in order to focus on their majors (Graff 1994). Student participation in integrated class discussions is important for the development of integrated thinking skills. Many students realise that their learning is contingent on their own engagement, although engagement is frequently influenced by personal and societal restrictions, such as introversion and peer non-participation in class (Trinidad 2020). Similarly, some students are unwilling to participate in class because of the societal expectation that they simply need to listen and take notes (Trinidad 2020). In a study performed in 2007, several barriers to integrated and interdisciplinary research for students were identified and some of these barriers include: a lack of prior experience or exposure to integrated thinking abilities, a resistance to inter-disciplinarity, insufficient examples of inter-disciplinary work, a lack of creativity, and not being open-minded and flexible to move outside disciplinary boundaries (Morse et al. 2007).

Literature also indicates that personal or individual barriers could prohibit students from thinking successfully in an integrated manner such as fear of complexity, lack of creativity, unwillingness to think in terms of other disciplines (Fortuin & Bush 2010; Morse et al. 2007). This study was performed in South Africa, and developing countries, such as South Africa and other African countries, battle with a massified higher education system, as well as a failing school system (Van Vuuren, Bruwer & Muller 2019). This raises the question whether students have been exposed to integrated thinking prior to their higher education academic programmes. Research indicates that a blended learning approach assists in the development of integrated thinking skills (Swan 2009), while most higher education institutions have moved post-Covid to a blended teaching and learning approach. It is generally accepted that blended learning is the new normal and here to stay (Sangster, Stoner & Flood 2020). Students' access to technology is thus vital.

Research methodology

Research design

The research problem and research objective of this study suggested that the most appropriate research design would be the mixed-methods approach by using a pragmatist paradigm. Mixed-methods analysis is typically a knowledge-based approach that takes into consideration a range of attitudes, viewpoints, and perspectives (theory and practice) (Johnson, Onwuegbuzie & Turner 2007). Creswell (2017) describes a mixed-methods research approach as a strategy that

incorporates both qualitative and quantitative research to solve the research objective and research problem. There are many benefits in using the mixed-methods approach as this method utilises the strengths of both quantitative and qualitative methods and, therefore, it becomes a powerful tool (Creswell & Clark 2017). The mixed-method approach also allows for triangulation in which case the researcher collects different sets of data that have an impact on the same research problem (Vosloo 2014). The process of triangulation improves and strengthens the research process (Creswell & Clark 2017). There are different types of triangulations and the one selected for this study is the explanatory sequential design. The explanatory sequential design is particularly suited to situations in which the researcher needs qualitative data to elucidate quantitative significant (or insignificant) data (Morse 1991). One of the benefits of triangulation is that it improves the validity and credibility of research findings when validity is concerned with how accurately a study represents or evaluates the notion or concepts being explored, while credibility relates to how trustworthy and convincing a study is (Noble & Heale 2019).

The quantitative and qualitative data are not regarded as separate parts, rather these sets of data are used to influence one another (Creswell & Clark 2017; Vosloo 2014). The primary data collected in this study were two-pronged, namely a questionnaire and interviews. A questionnaire was selected as the researcher firstly wanted to gather quantitative data from Heads of Departments (HoDs) at all universities accredited by SAICA. The questionnaire was administered via a Google Form and analysed with IBM SPSS. The quantitative data were analysed and based on the analysis, questions were drafted for the structured interviews held with SAICA representatives. Interviews were held via Zoom. The qualitative data obtained from the interviews were analysed and finally, a triangulation was performed between the qualitative, quantitative data, and existing literature.

Population and sampling

A population is the entire set of respondents from which a sample is drawn and will typically contain shared characteristics or other characteristics identifying this population (Saunders, Lewis & Thornhill 2012). Additionally, the population is defined as a collection of individuals or inanimate objects about whom a researcher wishes to draw generalisations (Coovadia 2018). For this study the researchers wanted to make a generalisation relating to the most significant barriers that stand in the way of developing integrated thinking skills during the higher education of chartered accountants. For the quantitative study population, the researcher sent questionnaires to academics who were experts in the field of educating prospective chartered accountants in South Africa. For the qualitative study population, the researcher interviewed accounting education experts, involved with SAICA, to gather the perspectives of this professional body.

The expert sampling technique was selected for both the qualitative and quantitative data collection. As the qualitative sample three SAICA representatives, widely regarded as accounting education experts, were selected by one of the Senior Executives of SAICA. Although the sample size is small, it is surmised that the views of the three accounting education experts are representative of the views of SAICA as an institution. For the quantitative sample, the HoDs at the accounting departments of all SAICA accredited universities were selected as they were also regarded as experts in the accounting education field. SAICA accredits 23 universities in total (spread across South Africa), therefore the HoDs in all 23 SAICA accredited universities were each requested to complete the questionnaire. Although the population is small, it was compensated for by including all SAICA accredited universities in the population.

Response rate

An overall response rate of 83% was achieved for the quantitative study, i.e., the questionnaires. A 100% response rate was achieved for the qualitative study, i.e., the interviews held.

Empirical results

Quantitative findings

This section summarises the findings obtained from the questionnaire.

Barriers for lecturers to develop integrated thinking skills during higher education

The purpose of this question was to determine which barriers academics perceive to be the highest barriers in developing integrated thinking skills in students. This question is a Likert 5-point scale question where respondents rated the importance of each factor as follows: 1 = agree completely; 2 = agree to a large extent; 3 = agree to a moderate extent; 4 = agree to a lesser extent; 5 = do not agree at all. Table 1 depicts the results obtained from the questionnaire relating to the barriers perceived by lecturers in developing integrated thinking skills.

The barriers listed in this question are based on those identified while performing the literature review. Of the barriers listed, the following six factors (listed from the highest to the lowest barrier) create the greatest problems for lecturers when trying to develop integrated thinking skills in students, namely:

- volume of technical content that needs to be covered per the SAICA syllabus (1.84);
- lack of expertise relating to integrated teaching methods (1.84);
- assessment of integrated thinking (2.74);
- large classroom sizes (2.89);
- lack of incentive for lecturers to embrace the development of integrated thinking skills (3.32); and
- unwillingness of lecturers to engage in integrated teaching and learning methods (3.32).

TABLE 1: Barriers for lecturers.

Barriers	1	2	3	4	5	*n*	M	Md	SD
Volume of technical content that needs to be covered per the SAICA syllabus	8	7	3	1	0	19	1.84	2.00	0.898
Lack of expertise relating to integrated teaching methods amongst lecturers	6	11	1	1	0	19	1.84	2.00	0.765
Assessment of integrated thinking	3	8	2	3	3	19	2.74	2.00	1.368
Large classroom sizes	3	5	6	1	4	19	2.89	3.00	1.370
Lack of incentive for lecturers to embrace the development of integrated thinking skills	0	5	7	3	4	19	3.32	3.00	1.108
Unwillingness of lecturers to engage in integrated teaching and learning methods	1	2	7	8	1	19	3.32	3.00	0.946
Limited formal lecture contact time with students	1	6	4	5	3	19	3.37	4.00	1.214
Limited tutorial contact time with students	3	3	4	7	3	19	3.37	4.00	1.165
Lectures delivered online rather than face-to-face	1	1	1	8	8	19	4.11	4.00	1.100

n, number of respondents who answered the question; M, Mean; Md, Median; SD, Standard deviation; SAICA, South African Institute for Chartered Accountants.

TABLE 2: Reliability statistics of barriers for lecturers.

Cronbach's Alpha	Cronbach's Alpha based on standardised items	Number of items
0.776	0.776	9

Although the vast majority of literature addresses barriers to implementing an integrated curriculum from an institutional perspective (Huber & Hutchings 2004), what is clear from literature is the general unwillingness of lecturers to teach in an integrative manner (Peet et al. 2011), their lack of expertise and training (Ashby & Exter 2019), lack of incentives (Huber et al. 2007), and the volume of technical content (De Villiers & Venter 2010) are all significant barriers for lecturers in developing integrated thinking skills in students. All of these factors were rated in the identified top six barriers that lecturers experience in developing integrated thinking skills.

As evident from the data, the three factors that were identified as the lowest barriers all relate to the mode of delivery and the amount of available contact time, i.e., limited formal lecture contact time with students (3.37); limited tutorial contact time with students (3.37); and lectures delivered online rather than face-to-face (4.11). This implies that a blended teaching and learning approach is not regarded as a significant barrier by academics, seeing that a blended approach does not need much formal lecture and tutorial contact time as some of the content is delivered online.

The highest standard deviation from this question is 1.370 and this is an indication that the results are close in value to the mean. The Cronbach's Alpha for this question is 0.776 which is illustrated in Table 2. Cronbach's alpha is a measure of internal consistency that is also used to determine scale dependability. The Cronbach's Alpha is 0.776 which is regarded as an acceptable internal consistency.

The summary item statistics for this question are set out in Table 3. The inter-item correlation has a mean of 0.278 with a variance of 0.053 which is considered acceptable.

Barriers for students to develop integrated thinking skills during higher education

The purpose of this question was to determine which barriers academics perceive to be the highest barriers that students experience in developing integrated thinking skills. The barriers listed in this question are based on those identified when performing the literature review. This question is a Likert 5-point scale question in which respondents rated the importance of each factor as follows: 1 = agree completely; 2 = agree to a large extent; 3 = agree to a moderate extent; 4 = agree to a lesser extent; 5 = do not agree at all. Table 4 depicts the results obtained from the questionnaire relating to the barriers perceived by students in developing integrated thinking skills.

Of the barriers listed in the question, the following six factors (listed from the highest to the lowest barrier) create the greatest problems to students when trying to develop integrated thinking skills, and therefore, these are elaborated on below:

- Students are overburdened with the technical content of the syllabus (1.42);
- Students have never been exposed to integrated thinking prior to higher education (2.32);
- Students are uncomfortable with complexity (2.37);
- The majority of students study in a second language and are unable to cope with the information provided in an integrated question (2.47);
- Students struggle with adaptability (2.58);
- Students do not understand what integrated thinking is (2.58).

The results agree with the barriers that the literature suggests in that a significant barrier for many students is the fact that they have language difficulties due to not studying in their first language (Van der Merwe 2014). Students are often overwhelmed by the volume of technical content that they need to master (De Villiers & Venter 2010). Literature also shows that personal or individual barriers may prohibit students from thinking successfully in an integrated manner, such as fear of complexity, lack of creativity, unwillingness to think in terms of other disciplines (Fortuin & Bush 2010; Morse et al. 2007). An interesting result is the factor that was perceived as the second highest barrier for students, which is that they have never been exposed to integrated thinking prior to higher education. The participants represent SAICA accredited universities, and the vast majority of students have thus completed their primary and secondary education in South Africa, or other African countries. Developing

TABLE 3: Summary item statistics of barriers for lecturers.

Description	Mean	Minimum	Maximum	Range	Maximum or minimum	Variance	N of Items
Item means	2.953	1.842	4.105	2.263	2.229	0.540	9
Inter-item correlations	0.278	-0.150	0.900	1.049	-6.010	0.053	9

TABLE 4: Barriers for students.

Barriers	1	2	3	4	5	*n*	M	Md	SD
Students are overburdened with the technical content of the syllabus	12	6	1	0	0	19	1.42	1.00	0.607
Students have never been exposed to integrated thinking prior to higher education	4	9	2	4	0	19	2.32	2.00	1.057
Students are uncomfortable with complexity	2	10	5	2	0	19	2.37	2.00	0.831
The majority of students study in a second language and are unable to cope with the information provided in an integrated question	5	4	6	4	0	19	2.47	3.00	1.124
Students struggle with adaptability	1	10	5	2	1	19	2.58	2.00	0.961
Students do not understand what integrated thinking is	1	8	8	2	0	19	2.58	3.00	0.769
Students are unwilling to participate during class time	2	4	8	3	2	19	2.95	3.00	1.129
Students are not open-minded	1	5	7	4	2	19	3.05	3.00	1.079
Students do not have the intellectual capacity to develop integrated thinking skills	1	3	4	10	1	19	3.37	4.00	1.012
Students do not have sufficient access to technology	0	1	7	10	1	19	3.58	4.00	0.692

n, number of respondents who answered the question; M, Mean; Md, Median; SD, Standard deviation.

TABLE 5: Reliability statistics for barriers for students.

Cronbach's Alpha	Cronbach's Alpha based on standardised items	Number of items
0.768	0.761	10

countries, such as South Africa and other African countries, battle with a massified higher education system, as well as failing school systems (Van Vuuren et al. 2019). From this perspective it makes sense that academics perceive that students have not been exposed to integrated thinking prior to higher education.

As evident from the data, the three factors that were identified as the lowest barriers for students are: students are not open-minded (3.05), students do not have the intellectual capacity to develop integrated thinking skills (3.37), and students do not have sufficient access to technology (3.58).

The highest standard deviation from this question is 1.129, and this is an indication that the results are close in value to the mean. The Cronbach's Alpha for this question is 0.776 which is illustrated in Table 5 and is regarded as an acceptable internal consistency.

The summary item statistics for this question are set out in Table 6. The inter-item correlation has a mean of 0.242 with a variance of 0.063 which is considered acceptable.

It is clear from the survey results to both research questions, i.e. the most significant barriers for both lecturers, as well as students, that the volume of the technical syllabus is regarded as the most significant barrier for both lecturers and students to develop integrated thinking skills.

Qualitative findings

This section summarises the findings obtained from the interviews.

Barriers for lecturers to develop integrated thinking skills during higher education

Interviewees were provided with the list of possible barriers and asked to identify the most significant barriers that stand in the lecturers' way of developing integrated thinking skills. Interviewees were also encouraged to add any barriers that were not on the list. The purpose of this question was to identify the barriers that SAICA deemed to be significant for lecturers. All interviewees agreed that there are barriers that stand in the way of lecturers developing integrated thinking skills in students. The following most significant barriers for lecturers were identified by the interviewees:

- Interviewee A: 'I would say that it would be a combination of the lack of expertise, combined with the volume of technical knowledge, and the large classroom sizes, as well as the assessment of integrated thinking.'
- Interviewee B: 'Lecturers don't feel empowered to teach [*integrated thinking skills*] because they feel uncomfortable with the term and therefore, disempowered. The majority of accounting departments focus on the transfer of knowledge instead of the development of competencies and skills. Also the syllabus overload and too much of a focus on technical [*skills*] and passing exams.'
- Interviewee C: 'For students entering varsity … I think there is a lack of skills due to problems at our school level and also students coming from poor socio-economic situations [*result in*] varsity being overwhelming. I think the biggest reason why we don't develop [*integrated thinking skills*] is because there are so many skills that need to be developed and technical skills will naturally be the first priority [*due to*] the syllabus overload.'

Barriers for students to develop integrated thinking skills during higher education

Interviewees were provided with the list of possible barriers and asked to identify the most significant barriers that stand

TABLE 6: Summary item statistics for barriers for students.

Description	Mean	Minimum	Maximum	Range	Maximum or minimum	Variance	N of Items
Item means	2.668	1.421	3.579	2.158	2.519	0.374	10
Inter-item correlations	0.242	-0.348	0.741	1.089	-2.131	0.063	10

in the students' way of developing integrated thinking skills. Interviewees were also encouraged to add any barriers that were not on the list. The purpose of this question was to identify the barriers that SAICA deemed to be significant for students. All interviewees agreed that there are barriers that stand in the way of students developing integrated thinking skills. The following most significant barriers for students were identified by the interviewees:

- Interviewee A: 'The fact that they have never been exposed to it before … we know there is a challenge with our basic education … do we then have sufficient time [*in higher education*] to develop integrated thinking skills? I would say that the volume of technical content is very much a contributor and I think the language issue is another one.'
- Interviewee B: 'Assessment drives behaviour … students will only do what is in their interest to pass … and if it is possible to pass without demonstrating [*integrated thinking skills*], students are not going to develop and demonstrate those competencies. Also students' lived experiences up to when they become students [*determine what they feel comfortable with*] and rote learning will take place if they don't have the necessary business context.'
- Interviewee C: 'I agree with what we have identified that the skills set that students arrive with at university [*is problematic*] so we need to scaffold. Another issue is the way that universities assess as assessment drives behaviour. With the way in which we assess, there is an unintended consequence that students will just try and pass the exam.'

Triangulation

Barriers for lecturers to develop integrated thinking skills during higher education

Quantitative data: The top four barriers for lecturers to develop integrated thinking skills identified by questionnaire respondents were the volume of technical content that needs to be covered per the SAICA syllabus, lack of expertise relating to integrated teaching methods, assessment of integrated thinking, and large classroom sizes.

Qualitative data: Interviewees identified three of the above four barriers as the most significant barriers that lecturers face, namely, the volume of technical content, lack of expertise, and large classroom sizes. Interviewees did not feel that the assessment of integrated thinking skills is a significant barrier for lecturers. One of the interviewees identified, in addition to the above, that another barrier for lecturers is the fact that many students who enter higher education, lack skills that were not developed during their secondary schooling.

Triangulation: There were three barriers that both questionnaire respondents and interviewees agreed on to be the most significant barriers for lecturers in developing integrated thinking skills in students, which was the volume of technical content, lack of expertise, and large classroom sizes. The quantitative and qualitative results agree with the literature. Despite there being literature available that sets out the barriers that lecturers experience in developing integrated thinking skills in students, no ranking of these barriers in accounting education has been performed before (according to the author's knowledge).

Barriers for students to develop integrated thinking skills during higher education

Quantitative data: The top four barriers standing in the students' way of developing integrated thinking skills, identified by questionnaire respondents, were as follows: being overburdened with the technical content of the syllabus, never being exposed to integrated thinking prior to higher education, discomfort with complexity, and the fact that many students study in a second language and are thus unable to cope with the information provided in an integrated question.

Qualitative data: Interviewees agreed that the following serves as the most significant barriers to develop integrated thinking skills: students being overburdened with the technical content of the syllabus, students not being exposed to integrated thinking prior to higher education, and students studying in a second language. An additional significant burden identified by interviewees is the fact that integrated thinking should be assessed in an appropriate manner. Assessment drives focus and if integrated thinking skills are not being assessed, students will not bother to master this skill. The lived experiences of students were also mentioned by one interviewee who felt that rote learning will take place if a student does not understand the business or the socio-economic context of an academic topic.

Triangulation: Both questionnaire respondents and interviewees agreed that the following three barriers are the most significant barriers for students when developing integrated thinking skills: students being overburdened with the technical content of the syllabus, students not being exposed to integrated thinking prior to higher education, and students studying in a second language. The quantitative and qualitative results agree with the literature.

Discussion and conclusion

Despite the proven benefits of an integrated curriculum in higher education there are many barriers to overcome as it is

time consuming, complex, and often underestimated (Peet et al. 2011). Some of the listed barriers from an institutional perspective are the availability of resources and the requirement of institutional leadership (Huber & Hutchings 2004). The limitation of maximum credit hours that higher education institutions are bound by also limit academic departments' abilities to expand their curriculum to include an integrated teaching and learning philosophy (Woodside et al. 2020). From a lecturer perspective, there are many barriers in implementing an integrated curriculum, such as the unwillingness to let go of discipline-specific superiority (Taylor et al. 2015), the significant rewards and benefits of discipline specialisation (Pharo et al. 2014), workload (Taylor et al. 2015), lack of understanding of what an integrated curriculum entails (Booth et al. 2009), and the fact that the planning of an integrated curriculum requires a substantial amount of work that is often overseen during processes (Huber et al. 2007). Another significant barrier is the fact that extensive training of lecturers needs to take place to implement a curriculum that is truly integrated in nature and will develop integrated thinking skills in students (McNair & Garrison 2013). Lastly, a significant factor that influences higher education's effectiveness in developing pervasive skills, is the overload of technical skills that professional bodies expect accounting programmes to develop (Lawson et al. 2014).

While the literature is rich in describing the institutional and lecturer-specific barriers that exist with the implementation of an integrated curriculum that supports integrated thinking, very little is said about the barriers that students might experience (Peet et al. 2011). This is especially true in the accounting education field. Thus, an important aim of this research objective was to explore not only barriers that lecturers in accounting education experience, but also to gain the academics' views on the barriers that students studying towards a chartered accountant designation may experience during an integrated teaching and learning approach.

From the combined responses received from both the questionnaire and interviews, the two most significant barriers that lecturers face when developing integrated thinking skills in students are the vast volume of technical content that needs to be covered as per the SAICA syllabus and the lack of expertise relating to integrated teaching and learning methods. Three other very important barriers identified by respondents to the questionnaire are the difficulty of assessing integrated thinking skills, large classroom sizes, and a lack of incentives for lecturers to embrace an integrated curriculum. Lack of sufficient contact time both for formal lectures, as well as tutorials and the use of a blended teaching and learning approach are listed as the least significant barriers for lecturers.

From the combined responses received from both the questionnaire and interviews, the two most significant barriers that students seem to face in the development of integrated thinking skills are: being overburdened with the technical content of the SAICA syllabus and the fact that students have not been exposed to integrated thinking prior to higher education. The challenges in South Africa's basic education and socio-economic conditions lead to shortcomings in students' lived experiences and, therefore, rote learning takes place because they do not have the necessary business context. Interviewees also noted that students study to pass their assessments and if integrated thinking is not assessed in a sufficient manner, students will not strive to master this ability as assessment drives behaviour and focus. The following three barriers were also listed as important according to respondents of the questionnaire: students are uncomfortable with complexity, the majority of students study in a second language and are unable to cope with the information provided in an integrated question, and students struggle with adaptability. Students not having the intellectual capacity to think in an integrated manner and insufficient access to technology are listed as the least significant barriers for lecturers.

Limitations

This study has been performed in South Africa and is thus fully representative of the manner in which professional accountants, more specifically South African Chartered Accountants, are trained during higher education. It would be beneficial if this study is also performed in other countries to help build a global perspective on the barriers that lecturers and students face in developing integrated thinking skills during higher education in the accounting education field specifically. Professional accounting bodies, other than SAICA, should also be included in future studies. For this study, only HODs and SAICA representatives were surveyed or interviewed. However there is a need to survey academic lecturers and students, respectively, to gain their insights and further publications should address this matter.

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Competing interests

The authors declare that they have no financial or personal relationship(s) that may have inappropriately influenced them in writing this article.

Authors' contributions

E.D.T. wrote and reviewed the article. B.M. and R.S. assisted with the conceptualisation and also provided supervision.

Ethical considerations

Prior to sending out the questionnaires and conducting the interviews, ethical approval was obtained from the School of Accountancy Research Ethics Committee (SAREC) at the University of Johannesburg (ethical clearance number SAREC20221018/03). All participants and interviewees provided their consent prior to participating in the questionnaire or interviews. The identity of the questionnaire

respondents and the university at which they were employed were kept confidential and the researchers simply referred to them as respondents. Regarding the three interviews held, the researchers simply referred to interviewees as interviewee A, B, and C. Both the respondents to the questionnaire and interviews were informed that their confidentiality would be protected, and all respondents and interviewees were also informed that they could withdraw their participation at any point in time, should they wish to do so.

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Data availability

The data supporting the findings are available in this article.

Disclaimer

The authors' views and opinions do not necessarily reflect the official policy or position of any linked agency of the authors.

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