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Developing self-regulated learning in accounting students: A guide for educators

Desarrollar el aprendizaje autorregulado en estudiantes de contabilidad: una guía para educadores

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ABSTRACT

Higher education educators need to equip students with self-regulated learning skills to keep up with ongoing global changes. Self-regulated learning is the ability of a student to set learning goals, monitor progress, adjust strategies, and control their learning process. There are different models proposed in the literature to develop and enhance the self-regulation process. The objective of this paper is to develop a practical programme based on self-regulated learning models for educators to incorporate into their existing curriculum, aiming to enhance students' self-regulated learning skills, particularly within an accounting curriculum. Using an action research methodology, the

programme was developed through two action research cycles, with both quantitative and qualitative data collected and analysed. The findings indicate that the proposed programme, grounded in self-regulated learning models, helped students take control of their learning process by setting goals, reflecting on their progress, managing their learning environment, and staying motivated. The paper demonstrates how educators can integrate this programme into their curriculum, offering valuable strategies for fostering self-regulated learning, which is crucial for students' academic success and future professional development in a rapidly changing global environment.

Keywords. Self-regulated learning; educators; self-regulated learning models; integrated; action research

RESUMEN

Los educadores de educación superior deben dotar a los estudiantes de habilidades de aprendizaje autorreguladas para mantenerse al día con los cambios globales en curso. El aprendizaje autorregulado es la capacidad de un estudiante para establecer objetivos de aprendizaje, monitorear el progreso, ajustar estrategias y controlar su proceso de aprendizaje. Existen diferentes modelos propuestos en la literatura para desarrollar y potenciar el proceso de autorregulación. El objetivo de este artículo es desarrollar un programa práctico basado en modelos de aprendizaje autorregulado para que los educadores lo incorporen en su plan de estudios existente, con el objetivo de mejorar las habilidades de aprendizaje autorregulado de los estudiantes, particularmente dentro de un plan de estudios de contabilidad. Utilizando una metodología de investigación-acción, el programa se desarrolló a través de dos ciclos de investigación-acción, con datos cuantitativos y cualitativos recopilados y analizados. Los hallazgos indican que el programa propuesto, basado en modelos de aprendizaje autorregulados, ayudó a los estudiantes a tomar el control de su proceso de aprendizaje estableciendo objetivos, reflexionando sobre su progreso, gestionando su entorno de aprendizaje y manteniéndose motivados. El documento demuestra cómo los educadores pueden integrar este programa en su plan de estudios, ofreciendo estrategias valiosas para fomentar el aprendizaje autorregulado, que es crucial para el éxito académico de los estudiantes y el futuro desarrollo profesional en un entorno global que cambia rápidamente.

Palabras clave. *Aprendizaje autorregulado; educadores; modelos de aprendizaje autorregulado; integrado; investigación-acción*

INTRODUCTION

The rapid pace of global change—driven by factors such as the COVID-19 pandemic, climate change, technological advancements, and the increasing skills gap—has made lifelong learning more crucial than ever. These changes present profound challenges to individuals, industries, and societies worldwide, necessitating a workforce that can not only adapt to new realities but also continue to learn and evolve throughout their careers (Karlen & Hertel, 2024; Stanistreet, 2020).

In the accounting profession, this need is particularly pressing. Accountants are increasingly required to keep pace with ongoing changes in accounting standards, regulations, and technologies. The introduction of cloud-based accounting platforms, artificial intelligence, blockchain, and other disruptive technologies is transforming the way accountants interact with clients and handle data (Bowles, Ghosh & Thomas, 2020; Mintchik, Ramamoorti & Gramling, 2021). Entry-level accounting tasks, once routine, are being automated, and the role of accountants is shifting towards more strategic, advisory functions (Asonitou, 2021). Therefore, accountants must not only master new technologies but also continue to refine their professional competencies

throughout their careers to remain relevant in this evolving landscape (Marx, Mohammadali-Haji & Lansdell, 2020). This need for continuous learning aligns closely with the demands of the Fourth Industrial Revolution (4IR), characterised by advancements in technologies that are transforming industries at an unprecedented pace (Gleason, 2018; Kayembe & Nel, 2019).

To ensure that accounting graduates are equipped to meet these challenges, higher education institutions must take on a more proactive role in fostering lifelong learning skills. Lifelong learning, defined as the ongoing development of skills and knowledge throughout an individual's career, is essential for professional success in today's dynamic world (Kan & Murat, 2020). Higher education institutions play a critical role in creating environments where students learn to study independently, develop self-awareness about their learning processes, and gain the confidence to continue learning beyond formal education (Brooks & Everett, 2008). As Van den Broeck et al (2022) emphasise, higher education institutions must promote lifelong learning by providing learning experiences that encourage students to take ownership of their learning journey.

At the core of lifelong learning is self-regulated learning (SRL)—the ability to set learning goals, monitor progress, adjust strategies, and take responsibility for one's own development (Anthonysamy, Koo & Hew, 2020; Nacaroğlu, Kizkapan & Bozdağ, 2021). SRL is fundamental to lifelong learning (Theobald, 2021), particularly in professions like accounting, where constant updates and changes in the regulatory and technological landscape demand ongoing skill development (Love, 2011). As accountants navigate complex and evolving financial environments, SRL enables them to identify knowledge gaps, set learning objectives, and seek out the resources needed to stay current. Without the ability to self-regulate their learning, accountants would struggle to keep up with the demands of professional practice (Mintchik et al, 2021).

Given these challenges, learning at the higher education level must go beyond simply transmitting information. It must equip students with the ability to learn how to learn. This paper posits that lifelong learning inherently includes being self-regulated in one's learning. SRL refers to how a student initiates, manages and controls their learning process and can use these skills efficiently when needed (Lima Filho & Casa Nova, 2019; Nacaroğlu et al, 2021). These skills are not innate; they must be developed over time, ideally within educational environments where educators can provide the necessary support and guidance (Becker, 2013; Pintrich, 2000).

Despite the recognised importance of SRL in fostering lifelong learning, there is a gap in the literature regarding its practical application in accounting education. While various theoretical models exist to develop and enhance SRL, these models primarily stem from educational theory and psychology (Panadero, 2017). Although these models provide a conceptual framework, they do not necessarily translate into practical, discipline-specific strategies for educators. Existing research highlights that educators are experts in their respective fields but may lack the necessary pedagogical knowledge to effectively develop SRL skills in students (Becker, 2013). Additionally, there is a lack of structured, evidence-based programmes designed specifically to integrate SRL into accounting education.

This paper addresses these gaps by exploring how SRL can be effectively embedded in accounting curricula. It examines existing SRL models and their applicability to accounting education, emphasising the need for practical guidance that educators can implement to foster student self-regulatory skills. By bridging the gap between theoretical models and practical applications, this study aims to provide a framework for developing lifelong learning competencies essential for success in the accounting profession.

The objective of this paper is thus to develop a practical programme for educators to integrate into their existing curriculum to enhance SRL skills within students. The practical programme is based on the foundational models found in the literature and provides educators with functional components and guidance to successfully include in the existing curriculum. As a contribution, this paper will firstly provide practical strategies for integrating SRL into the accounting curricula, helping educators cultivate the skills needed in students. This contribution fills a gap by offering a

structured approach to teaching SRL that aligns with the demands of the rapidly changing accounting profession. Secondly, the paper is situated within an action research framework and by repeating the cycle, valuable lessons can be learned that can inform how SRL can be enhanced in students. Using the action research methodology further contributes to the literature on how action research can practically be used in an educational setting and specifically within the scope of accounting education.

The rest of the paper is structured as follows: The next section explains the literature on SRL in the context of the self-regulated learning models. Following this, the action research methodology is explored, along with the steps of the action research framework, which include planning, acting, observing and reflecting. Finally, the findings are presented, accompanied by a discussion of the paper's limitations and suggestions for future research.

LITERATURE REVIEW: SELF-REGULATED LEARNING

SRL has been researched since the early 1980's in the educational psychology literature (Becker, 2013; Zimmerman, 1986). Since these early research endeavours, a definition of SRL emerged as "a process whereby learners personally activate and sustain cognitions, affects and behaviours that are systematically oriented toward the attainment of personal goals" (Zimmerman & Schunk, 2011). This definition indicates that SRL is an active and deliberate process where students guide their own development. SRL is, however, not solely an individualised form of learning, as it also encompasses social learning, such as seeking assistance from peers, and where educators play a crucial role in providing guidance for developing these attributes and processes (Zimmerman & Schunk, 2011). Research regarding SRL has explored the attributes, components and phases of SRL and how to enhance SRL, as well as establishing theories that explain how SRL work (Becker, 2011; Panadero & Alonso-Tapia, 2014). The theoretical perspectives led to the development of models of SRL over the years, which present the features of SRL and its processes, components and phases (Becker, 2011). The models of Boekaerts, Hadwin, Järvelä and Miller, Pintrich, and Zimmerman are of particular interest and will be discussed in the following sections.

Boekaerts' six-component model

Boekaerts began her research on SRL in the late 1980s, emphasising the role of emotions in learning, alongside cognitive processes (Panadero, 2017). Her work led to developing a six-component model based on two regulatory systems: the cognitive information processing system and the motivational-emotional system (Boekaerts, 1996). These systems work in parallel and interact across three levels: domain-specific, strategic, and goal levels (Boekaerts, 1996; Boekaerts, 1997).

At the domain-specific (bottom) level, the cognitive system focuses on conceptual and procedural knowledge, while the motivational system involves students' beliefs about their abilities and the strategies needed to succeed in a particular domain (Boekaerts, 1996; Silva, Rodriques & Leal, 2020). The strategic (intermediate) level involves the cognitive strategies used during learning, such as summarising or generating questions, and motivation strategies aimed at producing positive outcomes and intrinsic motivation (Boekaerts, 1996). At the goal (top) level, students set learning goals, create action plans, and monitor progress, linking their goals to their intentions and motivations to guide their learning process (Boekaerts, 1996).

Hadwin, Järvelä and Miller's model within the context of collaborative learning

The model by Hadwin, Järvelä, and Miller, developed for computer-supported collaborative learning, focuses on three key modes of regulation: self-regulation, co-regulation, and socially

shared regulation (Panadero, 2017). In self-regulation, individual learners plan, monitor, and evaluate their tasks independently. Socially shared regulation occurs when a group collaboratively manages and negotiates the cognitive, behavioural, and motivational processes required to complete a task. Co-regulation bridges the two, demonstrating how control shifts from individual learners to the group as they work together (Hadwin, Järvelä & Miller, 2011).

The model also includes four feedback loops within socially shared regulation. In the first loop, the group negotiates and constructs task perceptions; in the second, they set group goals and plan their approach. The third loop involves coordinating and monitoring progress, while the fourth loop is where the group evaluates their overall performance (Panadero, 2017).

Pintrich's model emphasising the role of motivation

Pintrich's model of SRL shares similarities with Zimmerman's cyclical phase model, organising SRL into four phases: planning, monitoring, control, and reflection. Each phase addresses four key areas of regulation: cognition, motivation, behaviour, and context (Panadero, 2017). *Cognition regulation* refers to those activities that a student will embark on in planning for a task, including being metacognitively aware of what the task will require of the student (Pintrich, 2004). *Motivation regulation* refers to students' efforts to manage their motivational beliefs, such as self-efficacy, task value, and goal orientation, and using strategies to control their emotions (Kueenzi, 2023; Pintrich, 2004). *Behaviour regulation*, a unique aspect of Pintrich's model, focuses on students' control over their actions, including time management, effort, and help-seeking behaviours (Pintrich, 2000; Pintrich, 2004). *Context regulation* addresses students' ability to influence aspects of their learning environment, even if many factors are predetermined by educators. In student-centered classrooms, students may have more control over projects, group work, or discussion topics, allowing them to regulate task and contextual factors (Pintrich, 2004).

Zimmerman's cyclical phase model

Zimmerman's research on SRL spans decades and explores SRL not only in academic settings but also in areas like athletic skill development (Panadero 2017). As a leading figure in the field, Zimmerman developed a cyclical phase model of SRL, divided into three phases: forethought, performance, and self-reflection (Zimmerman, 2000; Zimmerman & Moylan, 2009).

Forethought phase: This phase involves task analysis and self-motivational beliefs. Students analyse the task, set goals, and plan strategies to achieve those goals (Zimmerman & Moylan, 2009). Their goal-setting is influenced by both the task's assessment criteria and their desired level of achievement (Panadero & Alonso-Tapia, 2014). In this phase, motivation plays a crucial role, shaped by factors like self-efficacy, interest in the task, and the perceived value of completing it (Silva et al, 2020; Zimmerman & Moylan, 2009).

Performance phase: Here, students execute their plan using specific learning strategies, while monitoring their progress through self-observation and self-control (Zimmerman & Moylan, 2009). Effective strategies are essential for maintaining motivation and staying on track toward their goals. Self-observation involves metacognitive monitoring and keeping records for later analysis. Self-control includes time management, minimising distractions, and seeking help when necessary (Panadero & Alonso-Tapia, 2014).

Self-reflection phase: After completing a task, students evaluate their performance, analyse their results, and adjust their strategies accordingly (Panadero & Alonso-Tapia, 2014). This phase includes two key processes: self-judgment and self-reaction. In self-judgment, students assess their performance based on goals and criteria, leading to causal attributions for success or failure (Zimmerman, 2000). Self-reaction is the emotional response, influencing either adaptive decisions—such as refining strategies—or defensive decisions, like procrastination or task avoidance (Zimmerman, 2000).

Development of SRL

From the models as described and elaborated on, it is noted that SRL involves being behaviourally, metacognitively, and motivationally active and that it is a cyclical process. The models share key elements or components that provide a view of a self-regulated learner. In summary, it can be acknowledged that a self-regulated learner will:

- set goals to master the material or task set (goal setting);
- think about how they learn and employ effective learning strategies (metacognitive awareness);
- manage their learning environment through time management, limiting distractions and seeking help where necessary (control of the learning environment);
- stay motivated through strong self-determination and academic self-efficacy (motivation); and
- reflect and monitor their progress toward the goals and adjust their actions as necessary to ensure success (self-reflection).

A training or development programme should expose students to all these key elements so that students will know how to self-regulate, will believe that it is useful, and will be able to make the necessary modifications in their approach to meet the current learning outcomes (Schunk & Ertmer, 2000; Theobald, 2021). Educational research has found that training in SRL can successfully be implemented with diverse learners in various settings (Papageorgiou, 2022; Schunk & Ertmer, 2000; Smith, 2001; Weinstein, Husman & Dierking, 2000). As students can range from competent self-regulated learners to minimal self-regulated learners (Jansen et al, 2020; Ning & Downing, 2015), any support given to students to instil SRL should provide a comprehensive inclusion of the elements of self-regulation into the learning environment (Radović et al, 2024). Although there are different ways that educators can construct these key elements, the best-advocated approach is to use authentic classroom settings and provide guidance within an existing content area (Becker, 2013; Weinstein et al, 2000).

METHODOLOGY

Action research, which was the most appropriate method to use in this paper, is a well-suited methodology for educational settings as the researchers' practice is the subject of the study (Baker & Logan, 2006; Cunningham, 2008). The objective is to create change and improve students' learning experience (Hazelton & Haigh, 2010). It involves cycles of planning, acting and observing, and critical self-reflection. Here, the researcher critiques the process, the interventions, the subsequent plans and the improved strategies (Cunningham, 2008; Curtis, 2017). The action research cycle can be explored in various ways and in this paper, the stepped approach of McGowan (2012) was used. This involves four steps – planning, taking action, observing and reflecting to implement change. Action research combines well with an established research approach, and in this paper, a mixed methods approach was used to collect and analyse quantitative and qualitative data.

The action research method was adopted to critically reflect on a second-year accounting module, Accounting 200, and specifically the SRL programme conducted with the students. The lessons learned from these reflections could be used to improve students' learning experience, as this is the ultimate objective of action research (Hazelton & Haigh, 2010). In this research project, two action research cycles were completed. Non-probability purposive sampling included all the second-year accounting students in a Bachelor of Accounting degree in the action research cycles. This project focused on second-year accounting students as its primary participants due to their critical position in the learning trajectory of an accounting degree. Second-year students have typically progressed beyond the introductory phase of their studies and are beginning to engage

with more complex accounting concepts, requiring greater autonomy and deeper cognitive engagement (Biggs & Tang, 2011). At this stage, students encounter increased academic demands, including problem-solving, critical thinking, and application-based learning, making SRL particularly relevant to their academic success (Zimmerman, 2002). First-year students may still be in the process of adjusting to university-level learning, while final-year students are often more focused on meeting professional accreditation requirements and preparing for employment (Becker, 2013). By targeting second-year students, this study ensures that SRL strategies are introduced at a point where they can have a lasting impact on both academic performance and future professional development.

This paper reports on the second cycle of action research performed in this module and all the registered students in the second-year accounting class were participants in the SRL programme. The students' perspectives were gained through a 'before questionnaire' which was compared to an 'after questionnaire', which was quantitatively analysed through SPSS, and through reflective questions that were thematically analysed. The observations from the students' responses and the researchers' observations informed the reflections on the programme and the guidance that can be provided to educators to include in their curriculums.

.As noted by Gibbs et al (2017) in their literature review of action research in higher education, action research has certain limitations. They mention that this type of research is often performed with a single cohort by an insider-researcher, which makes it difficult to compare and generalise the findings. Moreover, it relies on student and researcher reflections, and it does not consider ethical issues. This paper did not aim to eliminate these limitations as they are part of what makes action research a unique research method. Students' personal reflections and perspectives were enhanced by conducting a paired sample *t*-test of the questionnaire items to indicate the difference in the students' responses before and after the programme. Ethical clearance was received by the university committee ensuring the contractual agreement to conduct the research in the appropriate manner to protect participants' rights and well-being. Prior to participation, all students were provided with detailed information about the study's purpose, procedures, and their rights, allowing them to give informed consent voluntarily. Participation was entirely optional, with students having the right to withdraw at any stage without any academic or personal consequences. To maintain confidentiality, all data collected were securely stored and accessible only to the research team. Participant anonymity was safeguarded by removing any identifying information from the dataset and reporting findings in an aggregated manner, ensuring that individual responses could not be traced back to specific students.

PLANNING

In planning for the second cycle of the programme, the reflections and observations from the first action research cycle were considered. These reflections indicated that the programme could be improved through structural and content changes. The first action research cycle consisted of five separate sessions and each session consisted of one of the key elements of SRL, namely goal setting (session 1), metacognitive awareness (session 2), control of the learning environment (session 3), motivation (session 4) and self-reflection (session 5). Based on reflections from the first cycle, it was recommended to reduce the number of sessions from five to three, by combining the first three topics—goal setting, metacognitive awareness, and control of the learning environment—into one session, while addressing the topics of motivation and self-reflection in later sessions. Several challenges were encountered during the planning process, including difficulty securing a suitable venue to accommodate the larger group of students for an extended first session. Additionally, scheduling conflicts arose due to the university holiday being moved earlier in the semester, which made it challenging to find an appropriate time for the second session on

motivation within the existing academic timetable for the second-year accounting students. The second action research cycle of the programme was thus changed, as indicated in Table 1.

On the content side, the reflections from the first action research cycle indicated that the sessions should be more fun, interactive, and practical and that special consideration should be given to certain areas that the students struggled with. These areas include breaking down their goals into manageable parts, linking appropriate learning strategies to their respective subjects, managing their time properly, and how to overcome procrastination.

Table 1. Changes to the second action research cycle of the SRL programme

Programme	Topics covered	Timing of the session
Session 1	Goal setting Metacognitive awareness	First week of lectures – a dedicated session in the student's first Friday morning class
Session 2	Control of the learning environment	Second week of lectures – the session was combined with a revision of the asset principles in the Tuesday afternoon class
Session 3	Motivation	Second week of lectures – the session was combined with the technical content encompassing Property, Plant and Equipment (PPE) in the Friday morning class
Session 4	Self-reflection	First Tuesday afternoon lecture after the mid-semester recess – a dedicated session providing students feedback on their first semester test with a practical exercise to show them how to self-reflect

ACTING

The programme was presented for the second time to the 2024 cohort of second-year accounting students at a residential university in South Africa. This cohort consisted of 580 students. The first session focused on explaining the different types of goals, their importance, and the planning process to achieve them. There were two main changes made to the topic of goal setting from the first cycle and that was to firstly emphasise the importance of understanding why students have certain goals as this has a direct influence on their ability to reach those goals; on their motivation; and on how they can control their learning environment. It is especially the systems that they put in place to reach their goals that are important and emphasised in the session. The second change was to practically illustrate how to identify short-term learning goals. This was achieved by creating a mind-map that indicated a long-term goal (for instance, obtaining 60% average for Accounting 200) and then demonstrating how to identify content goals that will assist in reaching this long-term goal. The mind-map further demonstrated where students can find the learning outcomes of a specific accounting topic and how these learning outcomes should become their learning goals.

The first session also included the topic of metacognitive awareness. This part of the session was dedicated to learning styles and learning strategies. Students identified their dominant learni style and explored how it aligned with various learning strategies. In the second cycle, the different learning strategies were explored further by relating it to the students' second year subjects – Financial Accounting, Financial Management, Auditing and Taxation. Students were divided into groups and each group received a card from a deck of cards, representing one of the subjects. Based on the card, the students discussed what learning strategies they could employ to assist them in learning that specific subject.

In the second session, distractions, time management and where to seek assistance was discussed. The session also introduced students to different applications to assist them with time management and dealing with social media distractions. It was noted from the first action research

cycle that procrastination is a problem that several students struggled with, and more time was spent on discussing this in class.

The third session was on the topic of motivation, and as the second session, was combined with the technical content of accounting. The session's main focus was to understand from the students what motivates them and how they can tap into the sources of self-efficacy to fuel their motivation. A major change to this session from the first action research cycle was to illustrate to students the importance of a mastery experience as a tool to motivate them. This was achieved through a "30-seconds" game, to bring in a fun and active element (Malan & Van Dyk, 2021). The class was divided into four groups, and for each group, a student volunteered to explain the five concepts on the game card. The self-created game cards included accounting concepts, such as accrual basis, intangible assets and conceptual framework. Each group was given 30 seconds to guess the concepts as explained. The aim of the game was to prove to students that they have already mastered a significant amount of accounting concepts, and that this knowledge should motivate their further studies.

The final session, held after the first test results, addressed self-reflection. Students learned how to use their test scripts as a learning tool, completing a worksheet to review their goals, learning strategies, and environments. The final session remained consistent with the structure and approach from the first action research cycle, as no adjustments were necessary.

At the beginning of the first session, students were required to complete the first research instrument: the before questionnaire. The questions were completed electronically through a Google form. The after questionnaire was completed electronically at the end of the last session through a Google form. The after questionnaire contained three reflective questions at the end to determine the students' overall view of the programme.

OBSERVING

Responses were received from 400 students regarding the before questionnaire (response rate of 69%), while 264 students completed the after questionnaire (response rate of 46%). When comparing the two questionnaires, 211 students completed both and were used to perform the paired sample *t*-test. There were no changes between the before and after questionnaires except for the after questionnaire, which included "now that I have completed the session" for each questionnaire item.

Observations from session 1 on the topic of setting goals

Before the programme, 74% of students agreed and strongly agreed that they knew how to set academic goals (Question 1), and 88% agreed and strongly agreed that they had set a goal for their second-year Financial Accounting subject, Accounting 200 (Question 3) as seen from Table 2. However, there was less certainty in responses for Questions 2, 5, and 6, as indicated by higher standard deviations (1.075, 1.086, and 1.102, respectively). These responses suggested that not all students had set goals for each subject, created plans to achieve their goals, or knew how to set goals for individual study sessions. As goal-setting is evidenced in all the SRL models and necessary for students to remain focused (Pintrich, 2004), it is a necessary part of the SRL programme to provide students with practical assistance in goal-setting.

Based on feedback from the first action research cycle, which highlighted time management issues within their study sessions, the second action research cycle focused on helping students break down long-term goals into specific plans for study sessions. It also aimed to demonstrate to students how their session goals relate to the learning outcomes of the different topics within their Financial Accounting subject.

After completing the programme, more students agreed or strongly agreed with the questionnaire items, with means ranging between 3.71 and 4.25. Students agreed and strongly agreed (from 71% to 79%) that they now have a goal for each of their subjects (Question 2), and 69% (up from 48%) agreed and strongly agreed that after completing the programme, they know how to set goals for individual study sessions (Question 6). There was also an increase in agreement for Questions 4 and 5, with 63% of students indicating they are better at creating plans and breaking down long-term goals into manageable steps.

Table 2. Before and after question statistics regarding goal setting

		Before		After		Significance of different	
	Questionnaire item	**Mean**	**SD**	**Mean**	**SD**	***t*-stat**	***p*-value**
1.	I know how to set academic goals for myself	3.76	0.938	3.19	0.927	-2.032	0.043
2.	I have set academic goals for each one of my subjects	3.71	1.075	3.95	0.980	-2.603	0.010
3.	I have a goal for Accounting 200	4.18	1.014	4.25	0.967	-0.464	0.643*
4.	I know how to break down my long-term goals into achievable short-term goals within each subject	3.25	1.047	3.71	0.987	-5.258	<0.000
5.	I have detailed plans in place to reach my goals	3.24	1.086	3.74	0.995	-5.508	<0.000
6.	I know how to set goals for each one of my study sessions	3.32	1.102	3.80	1.021	-5.306	<0.000

*Notes: SD=Standard Deviation; *=Statistical difference at the 5% level*

A paired sample *t*-test comparing pre- and post-programme responses indicated statistically significant improvements ($p < .05$) for all questionnaire items, except for Question 3. This suggests students felt more capable of setting goals for the year and their subjects and linking their overall goals to actionable plans after completing the programme. Notably, students already had clear goals for Accounting 200 before the programme, and their participation did not significantly change these goals, though they were less confident about having goals for other subjects (as reflected in Question 2).

Observations from session 1 on the topic of metacognitive awareness

In the second cycle of the programme, metacognitive awareness was introduced in the first session, focusing on learning styles and strategies. Five questions in the questionnaire assessed students' understanding of their learning styles, views on learning, and their ability to apply effective strategies for different subjects and presented in Table 3.

The three lowest means of the metacognitive awareness questions before the programme were noted for questions 9, 10 and 11 (means of 3.26, 3.27 and 3.43 respectively). The responses for these three questions also demonstrate a widespread over the responses, seen by the standard deviation being above 1. The responses for these questionnaire items indicate that students are not convinced that they know how to use learning strategies or how to change and adapt them. As the same trend was noted with the first action research cycle, the second action research cycle of the programme had a strong learning strategy focus. The SRL models agree that cognitive strategies, as elaborated on by Boekaerts (1996), cognition regulation, as indicated by Pintrich (2004,) or effective strategies, as revealed by Zimmerman (2000) within the performance phase, must be present during actual learning experiences. The programme's focus on these learning strategies increased the potential to employ the correct strategy and transfer it to different domains.

The second action research cycle reveals a more gradual increase in the mean scores (when comparing the before to the after scores), indicating a consistent understanding of the metacognitive processes. After the programme, it is especially the responses of questions 9, 10 and 11 that illustrate an increase from before to after the programme, with 58% agreeing and strongly agreeing that they now know how to use different learning strategies (from 44% before), that they can change their learning strategies to suit the content (61% agreeing and strongly agreeing, compared to 48% before the programme) and that 66% agree and strongly agree that they can adapt their learning strategies to their different subjects (from 54% before the programme). It appears that the students in the second action research cycle were more aware of their learning style as there was not a statistically significant change in the mean for questionnaire item 7 from the before to the after responses ($p > .05$).

Table 3. Before and after question statistics regarding metacognitive awareness

	Before		After		Significance of different	
Questionnaire item	**Mean**	**SD**	**Mean**	**SD**	***t*-stat**	***p*-value**
7. I know what my learning style is	3.70	1.012	3.91	0.943	-1.440	0.151*
8. I know how to learn in a manner that is optimal to my learning style	3.58	0.946	3.77	0.884	-2.898	0.004
9. I know how to use different learning strategies to study effectively	3.26	1.030	3.56	0.989	-3.998	<0.000
10. I know how to change my learning strategies to suit the content	3.27	1.034	3.64	0.969	-4.685	<0.000
11. I am able to adapt my learning strategies to my different subjects	3.43	1.018	3.68	0.947	-2.414	0.017

*Notes: SD=Standard Deviation; *=Statistical difference at the 5% level*

Observations from session 2 on the topic of control of the learning environment

It was promising to see from Table 4 that 77% of students agreed or strongly agreed they were aware of what hinders their study efforts (Question 12) before the programme, and 72% felt confident in organising their learning environment (Question 13). However, only a few students expressed overwhelming confidence in managing their time during study sessions as seen by the lower mean for Question 15.

Table 4. Before and after question statistics regarding control of the learning environment

	Before		After		Significance of different	
Questionnaire item	**Mean**	**SD**	**Mean**	**SD**	***t*-stat**	***p*-value**
12. I know what hinders my ability to study successfully	3.98	0.977	4.19	0.914	-3.928	<0.000
13. I know how to organise my learning environment so that I can study effectively	3.83	0.938	3.99	0.915	-3.705	<0.000
14. I believe that it is useful to manage my time effectively during my study sessions so that I can learn efficiently	4.18	0.833	4.25	0.883	-0.258	0.797*
15. I can manage my time effectively during my study sessions	3.09	1.007	3.70	0.959	-7.521	<0.000
16. I make use of application software (apps) to manage my time during study sessions	2.81	1.226	3.40	1.132	-5.547	<0.000

17. I make use of application software (apps) to limit distractions while I am studying	2.70	1.191	3.32	1.192	17.173	<0.000
18. I believe that it is necessary to seek assistance to be successful academically	4.36	0.868	4.36	0.829	0.222	0.824*
19. I feel confident to consult with lecturers/academic clerks on academic issues	3.04	1.257	3.72	1.118	-7.412	<0.000
20. I seek assistance whenever I need to in order to be effective in my studies	3.38	1.144	3.85	1.098	-5.678	<0.000

*Notes: SD=Standard Deviation; *=Statistical difference at the 5% level*

A significant number of students did not use applications to limit distractions (Question 16) or manage their time (Question 17), with lower mean ratings of 2.81 and 2.70, and a wide variation in responses (SD of 1.226 and 1.191, respectively). While 89% agreed and strongly agreed before the programme, that seeking assistance is necessary (Question 18), only 40% felt confident in doing so (Question 19), and just 52% actively sought assistance (Question 20). This discrepancy is concerning, as help-seeking is crucial for SRL and academic success.

After the programme, 79% agreed and strongly agreed that they knew how to organise their learning environment free from distractions (question 13). In comparison, 64% agreed and strongly agreed that they can better manage their study time effectively (question 15). As the session introduced students to several applications, it was encouraging to note that the mean for question 16 increased from 2.81 to 3.40 and the mean for question 19 increased from 2.70 to 3.32 before and after the programme.

With the session's focus on how to seek assistance through the role-play scenario, it appears the programme provided students with a bit more confidence in their help-seeking ability (question 19). Before the programme only 40% of the students agreed and strongly agreed that they have the necessary confidence to seek assistance appropriately (Question 19), while 65% agreed and strongly agreed after the programme. The same upward trend is noticed with question 20 where 52% agreed and strongly agreed that they do seek help before the programme and 70% agreed and strongly agreed after the programme.

In Zimmerman's (2000) model, help-seeking is within the performance phase indicating its importance within the learning process. Students might be prevented from seeking assistance when they see it as an admission of incompetence or a way to conceal academic difficulties (Merino & Aucock, 2017). The increased agreement amongst students regarding their help-seeking behaviour was further noticed in increased consultations experienced by the educators.

The two-sided *p*-values of the paired sample *t*-test are significant at the 5% level ($p < .05$) on all the questionnaire items, except for questions 14 and 18. Questions 14 and 18 both assess the student's belief. Firstly, in terms of how useful it is to manage their time and secondly how necessary it is to seek help. The programme did not change the students' strong belief that both time management and help-seeking are important, although they might not always know how to manage their time effectively or that they do seek help when necessary.

Observations from session 3 on the topic of motivation

From Table 5, it is noticed that many students displayed strong confidence in their ability to reach goals and complete academic tasks, with 86% agreeing or strongly agreeing to Question 22, and 85% to Question 24. However, there was a wider range of responses for Questions 23, 25, and 26, indicating that not all students felt resilient, motivated by peers, or confident in their learning strategies (SD ranging from 1.048 to 1.214). Despite this, 73% of students agreed and strongly agreed that they are internally motivated (Question 21), though their study habits may not yet align with this motivation (Question 26).

Table 5. Before and after question statistics regarding motivation

	Before		After		Significance of different	
Questionnaire item	**Mean**	**SD**	**Mean**	**SD**	***t*-stat**	***p*-value**
21. I believe that I am internally motivated towards academic tasks	3.86	1.032	3.96	1.005	-0.442	0.659*
22. I believe that my goals are within my reach and I am committed towards reaching them	4.19	0.893	4.16	0.876	0.495	0.621*
23. I am resilient and recover quickly from failures and setbacks	3.72	1.111	3.94	1.013	-2.884	0.004
24. I believe that I am academically capable to perform tasks at the level required of a second-year students	4.18	0.885	3.98	0.994	2.610	0.010
25. I am encouraged by a mentor and/or by my peers	3.38	1.241	3.69	1.080	-3.118	0.002
26. I am confident in my learning strategies and in my study habits and this motivates me	3.60	1.048	3.81	0.967	-2.301	0.022

*Notes: SD=Standard Deviation; *=Statistical difference at the 5% level*

From the six questions related to motivation and self-efficacy, most students agreed or strongly agreed with the statements after the programme. Although Question 26 had the lowest mean, more students reported confidence in their learning strategies post-programme (up from 57% to 69%). The paired sample *t*-tests revealed significant improvements ($p < .05$) on all items except for Questions 21 and 22, which assessed students' internal motivation and belief that their goals are attainable. The programme did not alter these beliefs, displaying no significant differences for these items. It was, however, concerning to note that the mean for Question 24 decreased after the programme (from 4.18 to 3.98). At the start of the semester, students may have rated their academic ability at the second-year level more highly, but as the semester progressed, they might have noticed a shift in their initial perceptions of their capabilities.

Observations from session 4 on the topic of self-reflection

The last section of the questionnaire required students to consider six statements regarding their self-reflection practices. All the questions in Table 6 indicate a high spread of responses from the students before the programme, with the standard deviation being above 1 (except for question 28). Although there is agreement with the statements (seen by the mean for all the questions to be above 3), quite a lot of students neither disagreed nor agreed with the statements. This indicates that students might not practice self-reflection regularly or do not know how to implement it as part of their learning process.

Self-reflection is the last phase in both Zimmerman's & Pintrich's models, indicating its importance for students to reflect on their work, evaluate their performance against goals and articulate reasons for their results (Panadero & Alonso-Tapia, 2014). The responses from students before the programme indicate the importance of including practical exercises to showcase the importance of self-reflection and how it can be included in the learning process.

After the programme, a significant shift can be seen in the spread of responses for the six statements, as presented in Table 6. The standard deviation is less than 1 on all the statements and fewer students strongly disagreed or disagreed with the statements than before the programme. It can thus be surmised that the self-reflection session convinced students that it is an important part of the learning process and presented students with a practical way to achieve it after a written test.

Table 6. Before and after question statistics regarding self-reflection

	Before		After		Significance of different	
Questionnaire item	**Mean**	**SD**	**Mean**	**SD**	***t*-stat**	***p*-value**
27. I know how to self-reflect on my academic progress in a subject	3.64	1.017	4.13	0.865	-5.579	<0.000
28. I know how to evaluate my performance in an assessment based on the learning outcomes and assessment criteria	3.50	0.976	4.09	0.794	-7.654	<0.000
29. I know how to self-assess my strengths and weaknesses after an assessment	3.61	1.003	4.09	0.820	-5.545	<0.000
30. I know how to self-assess myself and make the necessary changes in my learning strategies	3.53	1.028	3.91	0.863	-3.942	<0.000
31. I reflect on my studies regularly	3.37	1.070	3.98	0.878	-6.424	<0.000
32. I know how to reflect on my progress based on my learning goals	3.57	1.014	4.01	0.857	-5.109	<0.000

*Notes: SD=Standard Deviation; *=Statistical difference at the 5% level*

Most students reported a strong ability to reflect and self-assess after the programme. Specifically, 85% agreed or strongly agreed that they know how to self-reflect on their academic progress (Question 27), 86% on evaluating their performance against learning outcomes (Question 28), and 82% on assessing their strengths and weaknesses. The paired sample *t*-tests demonstrated statistically significant improvements ($p < .05$) across all items, demonstrating that the session effectively enhanced and strengthened the students' self-reflection skills.

REFLECTING

Student reflections

The after questionnaire contained three questions to determine the students' views on the programme in its totality. The first question required them to elaborate on which element within the programme they found most beneficial. In contrast, the second question wanted to know which element was the least beneficial to them. The last question required students to describe their overall experience of the programme.

Students reflected on various sessions of the programme, indicating that it had a unique impact on each individual. The goal-setting session, in particular, was highlighted as valuable for helping students reassess and adjust their existing goals. One student noted that this session revealed mistakes in their goal-setting process, leading to important adjustments:

> *"For me, it's goal setting as it helped me to know what I was doing wrong because I was not reaching my goals... I realised that I had to tweak and change a few things" (Student 64).*

Students also realised that setting goals alone was insufficient—they needed systems in place to achieve them. One student reflected on the importance of aligning goals with supporting strategies:

> *"Goal system. It showed me that goal setting alone is not enough. You need systems in place to reach your goals" (Student 39).*

Some students connected goal setting with other aspects of the SRL cycle, demonstrating an understanding of how the elements work together. One linked goal setting with motivation:

> *"Goal setting and motivation. It's important to know what I'm working towards as it keeps me motivated. Reflecting on motivation helps maintain consistency and resilience" (Student 26).*

Students found the session on learning styles and strategies highly beneficial, particularly in learning how to adapt these strategies to different subjects. They gained a better understanding of how to modify their learning strategies based on the content they are studying. Many students expressed that they were gradually discovering their learning strategies. Others appreciated the flexibility to switch between learning styles:

> *"I didn't know how to use different learning strategies for my majors. Now I feel free to change styles when one isn't working for me" (Student 153).*

Time management and procrastination, common challenges for students, were highlighted as key takeaways. Many students found the tools and techniques taught in the sessions helpful for improving these areas:

> *"I've been struggling with time management for a long time... Pomodoro timer and the Alarmy app are my favourites so far" (Student 142).*

Others noted improvements in their ability to reduce procrastination:

> *"I always procrastinated, but after these sessions, I've seen an improvement in the amount of study time I invest in my modules" (Student 184).*

Additionally, the role-play scenario in session 2, which aimed to boost students' confidence in approaching lecturers for consultations, was successful:

> *"The comfortable platform of approaching a lecturer to consult as I was scared before especially because I have low confidence about my vocabulary but the lectures are welcoming" (Student 223).*

It can be seen by the responses of students as presented in Table 6 that the session on self-reflection had a strong impact on the students' knowledge about self-reflection and how to practically implement it. It is thus not a surprise that students found the session to be beneficial to them:

> *"Self-reflection. My inability to reflect on myself has always been a difficulty for me, and as a result, I would fail to be aware of my strengths and weaknesses, particularly in my academics and that would have me struggle a lot academically. The main thing I liked about this programme was that in addition to being taught to us, it also provided us with tools and guidance on how to effectively self-reflect and I cannot express enough how that has benefited me and continues to do so, not only academically but in other aspects of my life" [Student 186].*

Many students found all the sessions in the programme beneficial, with no specific session standing out as irrelevant. One student noted:

> *"I felt that the course as a whole targeted everything that was needed, and nothing was irrelevant as everything had a benefit" (Student 38).*

When students did point out specific sessions, it was often because they had already mastered that aspect of learning. Some had already set goals or understood their learning styles before the programme, suggesting that students with a natural propensity for certain skills may find it easier to self-regulate those areas (Ainscough et al, 2017).

However, concerning areas were also noted, particularly for students who struggled with time management, procrastination, and adapting learning strategies to different content. These elements were viewed as less beneficial because students had not yet mastered them. It would be valuable to continue offering strategies to address these challenges throughout the semester, providing new perspectives that may help students overcome these difficulties.

Overall, the students described the programme as a good experience, insightful, educational and fun. From the responses, only two students indicated that the programme was tolerable and average, with no explanation or reasons given for their assessment. On a positive note, students recognised the programme as a valuable resource that empowered them and equipped them with essential tools to enhance their learning journey:

"It has empowered me to take ownership of my own learning journey, adapt to changing circumstances, and continually strive for personal and professional growth" (Student 230).

Students valued the lecturers' attentiveness in recognising their needs, which went beyond simply achieving good grades. They appreciated the focus on their learning processes and the sustainability of those approaches:

"The experience was amazing as it shows that the lecturers care about us as students. Not only do they care about marks attained but they also take into account the process of attaining those marks" (Student 85).

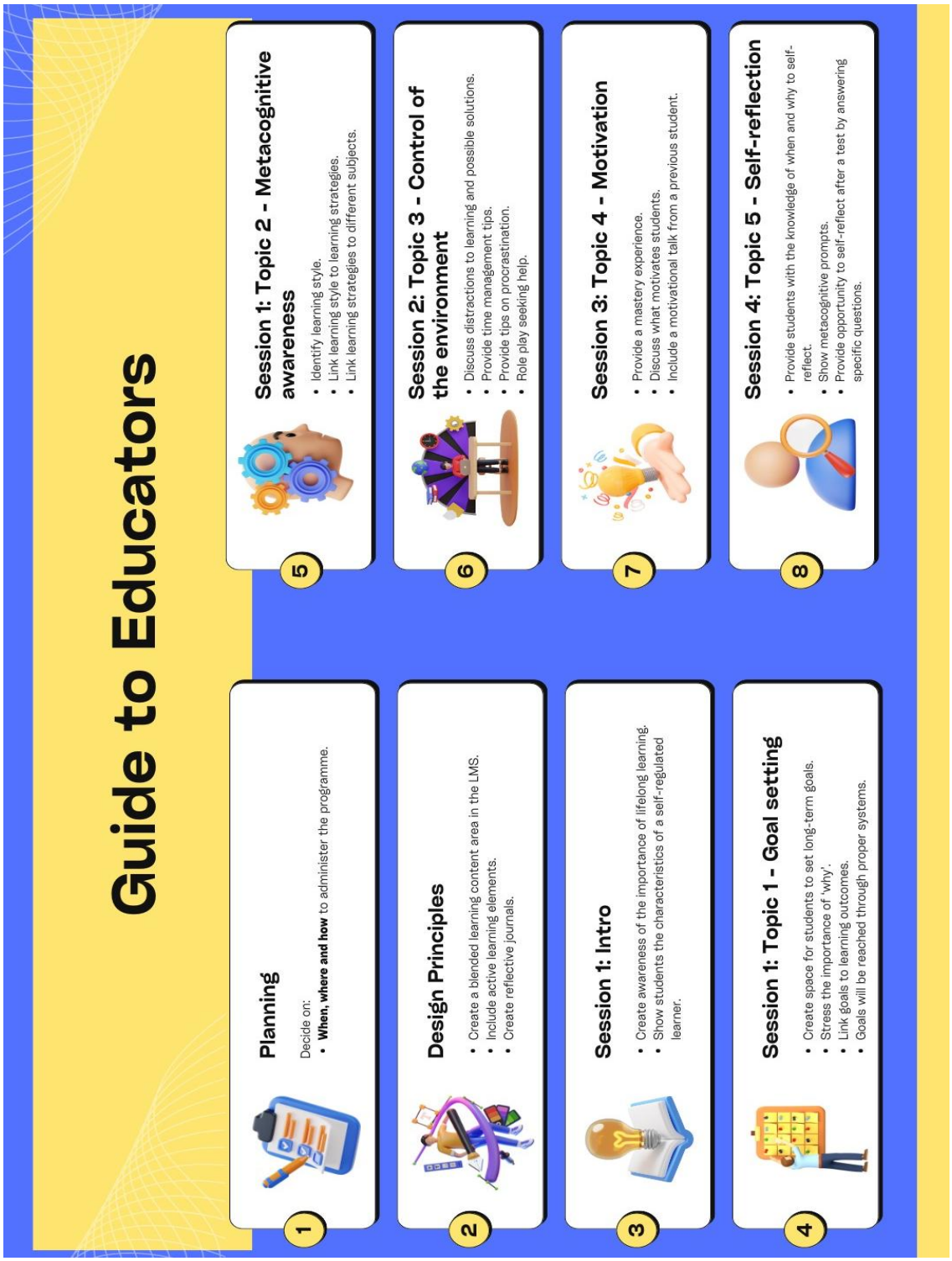
Researchers' reflections

For the second action research cycle, the changes made to the programme was beneficial to the students. From the students' comments it is noted that the programme is of use to the students and the following programme structure and content recommendations are made to educators and summarised in Figure 1:

- *Timing of sessions:* The programme is most effective with one dedicated session at the beginning of the semester and another after the first test. The initial session should emphasise the importance of SRL skills, covering topics like goal setting and metacognitive awareness. Subsequent topics, such as controlling the learning environment and motivation, can be integrated with the subject's technical content. A separate session on self-reflection is essential, as this exercise requires time for students to develop the habit of reflection.
- *Programme Components:* Although the sessions have been modified to include more active learning, adding new elements is unnecessary. The existing five components identified in the literature align well with students' learning journeys, and no additional elements emerged from the observations or student feedback. The programme components align with the key elements of the SRL models, reinforcing their inclusion within the programme.
- *Goal Setting:* A session on goal setting should encourage students to articulate their long-term goals while providing practical guidance on establishing study session goals or weekly schedules. It is crucial to link subject-specific goals with learning outcomes to clarify how achieving a subject's learning outcomes correlates with desired grades.
- *Metacognitive Awareness:* While exploring learning styles is a good starting point for a session on metacognitive awareness, the emphasis should shift to effective learning strategies such as repetition, elaboration, organisation, and self-testing. Incorporating the different subjects into the session can assist students in understanding how to approach their studies effectively.
- *Learning Environment Insight:* A session on control of the learning environment should assist students in identifying gaps and addressing issues related to procrastination and time management. The discussion space allows students to realise they are not alone in their struggles and fosters peer support for potential solutions. Normalising seeking help is a crucial component to include in the session and a role-play scenario can achieve that.
- *Motivation and Self-Efficacy:* Both literature and student feedback indicate that mastery experiences boost self-efficacy. A session on motivation should include a mastery experience so that students can understand its importance in terms of their motivation. A game, such as 30-seconds can achieve this to include a fun element into the programme.
- *Self-Reflection:* Since self-reflection is crucial for self-assessment, it's important to create an opportunity for students to practice this skill. A SRL programme should include an exercise after a first test where students can effectively reflect on their learning thus far and make the necessary adjustments to their learning process. They can then replicate such an exercise for subsequent tests.

- *Other practical advice:* A blended learning area within the Learning Management System (LMS) should be created for students to access class notes, handouts, and additional materials such as videos. The LMS can also be used to create a space where students can answer reflective questions within a journal tool. This practice offers students a private space to contemplate their learning and identify struggles, while also providing educators with insights into students' strengths and weaknesses for further discussion in future sessions.

Figure 1. Summary of the proposed programme as guidance for educators



CONCLUSION, LIMITATIONS AND AREAS FOR FURTHER RESEARCH

The urgency for SRL in the accounting profession cannot be overstated, especially in light of the rapid changes driven by technology and shifting industry demands. This paper underscores the vital role that higher education institutions play in equipping future accountants with necessary learning skills to navigate this evolving landscape. By integrating practical strategies for developing SRL into the existing curriculum, educators can empower students to take ownership of their learning journeys, enhancing their ability to adapt to new technologies and regulatory frameworks.

The proposed programme, grounded in established educational theories and based on the elements found in existing SRL models, offers educators a structured approach to fostering SRL skills. The paper demonstrated how the proposed programme can effectively be integrated within an existing curriculum without 'losing time' on the technical content of the subject. The different elements of the programme were better understood by the students as it was presented within their accounting module and added to their accounting topics. This will prepare students for the immediate challenges of their studies and instil a mindset geared towards continuous professional development. As the accounting landscape continues to transform, nurturing these skills within students will be essential for their long-term success and relevance in the field.

Additionally, the action research framework allows for ongoing reflection and improvement of SRL practices, enabling educators to respond dynamically to students' needs and the ever-changing accounting environment. Ultimately, this initiative represents a significant step forward in aligning educational outcomes with the realities of the modern workforce, ensuring that accounting graduates are well-prepared to thrive in their careers while contributing positively to their organisations and society at large.

The paper had certain limitations. The sessions were presented at a single university. The paper also did not attempt to connect the sessions' effectiveness to students' performance. Several aspects influence students' performance, and it was not the paper's objective to test that. The paper collected the students' perceptions, and the quantitative and qualitative data provided unique insight into the students' application of the key elements. Using action research as the methodology of the study brings forth the limitation that the study is performed by the researchers who are also the educators trying to change or improve the teaching and learning practices. The limitation was counteracted by making every effort to report the data without altering it to suit the findings and to include positive and negative comments as received from the students.

Future research could evaluate the effectiveness of presenting similar sessions within other subjects and other tertiary institutions. This could provide clarity on the guidance provided to educators and provide further practical ideas as to how it can be executed. Each content area could provide a unique vantage point to investigate its efficacy. A longitudinal study could be conducted by tracking students' SRL development and academic performance over multiple semesters. By analysing trends over time, the study could provide valuable insights into the long-term effectiveness of SRL strategies in enhancing student performance and retention.

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