Embracing Digital Advancements in Education: Assessing the Impact on Undergraduates Accounting Achievement

Mariana Jusop[1], Norhayati Abdullah[2], Shahida Shaharuddin[3], Noor Fadzlina Mohd Fadhil[4]

[1,2,3,4]Lecturer, Department of Accounting, Faculty of Business and Management, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

Abstract

This study delves into the integration of digital technology within educational frameworks, specifically focusing on its influence on the academic performance of undergraduate accounting students. The study seeks to uncover the multifaceted aspects of how technological interventions shape learning outcomes, by exploring the intersections of digital tools and accounting education. Specifically, this study aims to evaluate the effectiveness of the use of a digital innovation that we named as Interactive Accounting Discourse Module (INTERACC) in undergraduates' accounting courses. This innovation provides convenience in accessing learning materials such as e-notes, discussions, and interactive assessments using digital devices and gadgets. Data were gathered through surveys with accounting students to obtain their feedback about the effective teaching and learning process especially for reading-based courses. In addition to the questionnaires, students' performance was analysed through the comparison of course learning outcomes achievements before and after the intervention. The findings indicate INTERACC improved the learning outcomes of the course and students showed positive attitudes toward using it in terms of its ease of use, usefulness, and accessibility. As such, this research is an attempt to contribute to the development of an interactive platform for accounting students that could create enjoyable learning, and yet informative experience.

Keywords: teaching and learning effectiveness, accounting courses, interactive module, digital tools, information technology

1. Introduction

Accounting program is mainly dominated by calculation-based courses. However, there are also some accounting courses that need a lot of reading and memorising techniques. The textbook–based conventional ways of teaching material may create a dull and boring subject when most of the teaching hours were spent on lecture notes and textbooks. Even though there are a lot of free videos and interactive materials illustrating the accounting topics which are believed to be useful to enhance students' understanding, they are not well-organised and scattered. These accordingly add more challenges for accounting students to immerse with the reading-based accounting courses. Thus, more critical research is needed that focuses on how the innovation of interactive teaching materials of accounting courses or

topics can create a "deep-learning environment" among accounting students.

The use of online meetings and materials helps accounting students contribute a much positive view about the course and a better perception about the instructor's teaching effectiveness for the course (Wen and Wang, 2022). Students prefer learning strategy with interactive session that promotes deeper understanding of accounting courses (Shaffie, Mat Zin and Ismail, 2020). Previously, some studies revealed a lack of commitment to traditional learning management systems (LMS) among the generation of 'information consumers' (Al-Hunaiyyan et al., 2020). Several factors were also listed as the main challenges faced by accounting students such as "poor time-management and inadequate revision", "difficulties in mastering teaching methods in accounting", and "lack of student motivation and encouragement" (Ako Oben, Nwosu and Mahlaule, 2022). Whether the teaching and learning process are directed face-to-face or through online, the challenges are still no difference. Most accounting students perceived reading-based subjects as boring even though more than thirty percent of the courses in accounting program are theoretical or reading-based courses.

One of the reading-based accounting courses is Financial Reporting Theory (FRT). In our university, this course is taught in the fifth level of financial accounting and reporting courses. The coverage of the FRT course should have developed students' interest through the application of students' prior knowledge and understanding in accounting topics. However, the traditional approach to teaching, relying heavily on textbooks, can result in a dull and unengaging learning experience, especially when a significant portion of instructional time is devoted to lecture notes and textbook study. Furthermore, despite the availability of numerous free videos explaining FRT topics, the content tends to be disorganized and scattered. Moreover, most of the materials do not reflect Malaysian cases thus adds more challenges for accounting students to immerse with the topic in FRT course.

Prior research innovated an interactive discourse teaching materials for accounting courses are hardly be found. Specifically, the innovation for FRT course is combining various sources of related notes, issues, case study, and videos as well as online assessment on the topic. This teaching innovation is an attempt to contribute to solve some of the issues related to the teaching and learning process for accounting students. The innovation is named as INTERACC, an acronym for an Interactive Accounting Discourse Module on teaching and learning materials. INTERACC is designed to provide all FRT topics with related e-notes, discussions on current issues, case studies, illustrations, videos, and online assessments. These INTERACC materials were hosted on Google Site for convenience students' access.

After the fourteen-week intervention, this study aimed to assess the impact of using INTERACC in FRT teaching and learning through answering the following questions:
1. What are the outcomes of using *INTERACC* in enhancing teaching and learning process of FRT course?
2. How does the use of *INTERACC* in FRT course influence the effectiveness of teaching and learning process in that course?

2. Literature review
The recent advancements in digital technology across diverse sectors, notably in education, have

significantly bolstered the quality of education facilitated by educators and academics. The rapid pace of the internet, coupled with high-performance digital tools and advancements in machine learning techniques, has help address the shortage in human capital skills. The integration of digital devices makes it easier to improve the atmosphere for teaching and learning (Qureshi, et al., 2021). Recent literature also highlights the inadequate educational curriculum levels and skills of teachers, emphasizing the urgent need for enhancement. This highlights the importance of integrating new digital technologies into educational curricula, aligning them with the constantly evolving technological landscape (Qureshi, et al., 2020).

This situation indicates the need for a creative teaching and learning method to be applied by the educators. It is expected to increase students' retention at class and improve their grade for the subject. For example, previous studies evidenced the use of flipped-classroom as an innovative teaching approach (Sevillano-Monje, Martín-Gutiérrez, and Hervás-Gómez, 2022; Campillo-Ferrer and Miralles-Martinez, 2021) had proved that it enables students to easily understand their progression in the learning and improve their motivation to manage cognitive knowledge more effectively. The results align with the research conducted by Olivan Blazquez et al. (2019), which confirmed that students who adopted an active flipped classroom-based learning methodology demonstrated improved academic performance and a decreased perception of content difficulty as compared to those who learned using a traditional method. Therefore, it is crucial for educators to embrace alternative approach of teaching so that the competence level of students can be improved.

Besides flipped classroom, there are many other active methodologies that can be applied in teaching and learning process such as service learning, cooperative learning, blended learning, case study, and project-based learning. These types of teaching and learning approach have shifted traditional ways of knowledge transfer from teacher-centred to student-centred learning (Albashtawi and Al Bataineh, 2020; Sevillano-Monje, et al., 2022). The aims are to create a dynamic and engaging learning environment, encourage critical thinking, and prepare students for the challenges of the modern world. This innovative teaching often incorporates technology, utilizing tools such as multimedia presentations, interactive simulations, online resources, and educational apps to enhance the learning experience (Qureshi, et al., 2021; Backfish, et al., 2021; Amhag, Hellstrom, and Stigmar, 2019). According to Albashtawi and Al Bataineh (2020), it is unavoidable to live in the digital age without encountering emerging online platforms for teaching and learning. Because of this, learning how to incorporate new technology functions in the classroom has become essential as all higher education institutions attempt to use new online platforms.

Since mobile devices and applications have always been a part of daily life, they are incredibly beneficial for students to use them even in the classroom. The availability and affordability of new apps and mobile devices has made students' academic and social life become easier thus prompted educators to utilize these devices to promote teaching and learning. Among the benefits of using mobile devices is enhancing traditional learning by presenting the lessons more interactively and effectively (Stathopoulou, et al., 2019). For instance, the combination of the use of Google Classroom, Google Form, Google Jamboard, Quizizz, Quizlet, Kahoot!, Socrative, etc. using tablets, smartphone or other computer technologies in the classroom has promoted quality in teaching and learning process (e.g. Backfisch, et al., 2021; Haleem, et al., 2022; Pratiwi & Waluyo, 2023). Besides, the usability, flexibility, and mobility features offered by these technologies are really fit to today's student lifestyle (Karabatzaki, et al., 2018; Albashtawi and Al

Bataineh, 2020; Al-Hattami, 2023). Whatever approach is used, integrating technologies into teaching is crucial to support students' learning process and enable them to participate in a digitalized society.

3. Methodology

This research was conducted to a group of undergraduate accounting students who enrol in Financial Reporting Theory (FRT) course in a public university in Malaysia. This research was carried out for the duration of one year. The implementation of the teaching and learning process were using INTERACC for the 14 weeks of study in one semester followed by the evaluation and observation process by the instructor.

There were 82 students registered FRT course that semester. By surveying students on their use of INTERACC, we can draw several conclusions about the use of INTERACC in FRT course. The data collection was treated quantitatively. A set of questionnaires was prepared to survey the students' feedback of using INTERACC in teaching and learning process.

To evaluate the practicality of the use of INTERACC in teaching and learning, we observed students' response, take note on the latest updates and knowledge, and improvised the materials provided. The evaluation is done through the analysis of the questionnaire which were distributed in the end of the semester after the intervention is completed. The questionnaire consists of four domains which measure the usefulness, ease of use, accessibility, and satisfaction from the use of INTERACC.

To assess the effectiveness of INTERACC, the students' final semester results were gathered and compared to the results of the same course prior to the implementation of the intervention. We delved into the analysis of two key course learning outcomes (CLO) within the FRT subjects, drawing comparisons with the corresponding CLOs from the preceding semester.

4. Findings

The INTERACC integrates various sources of notes, illustrations, and assessment in the FRT course in the form of video presentations, online assessment, and references. In other words, the INTERACC provides an interactive study process for undergraduate accounting students, hence able to create enjoyable learning, and yet informative experience.

As for the first objective, this research quantitatively investigated the attitudes of undergraduate accounting students toward INTERACC by analysing their responses to 15 items in 3 domains (usefulness, ease of use, and accessibility) after the implementation of INTERACC. Descriptive statistics (means and standard deviations) of the students' feedback on their attitudes toward using the INTERACC questionnaire domains were calculated to directly address this.

Table 1: Means and Standard Deviations of Students' Responses after the Intervention.

No.	Dependent Variables	Mean	Standard Deviation	Rank
1	Attitudes toward Usefulness	4.25	0.75	1
2	Attitudes toward Ease of Use	4.13	0.82	3
3	Attitudes toward Accessibility	4.14	0.87	2
	Total	4.17	0.81	

Table 1 shows that usefulness domain was ranked first based on the mean value of 4.25 out of 5 scores. The standard deviations for usefulness are relatively low (0.75), suggesting that there was generally a high

level of agreement among students regarding the usefulness of INTERACC. The accessibility domain has the mean value of 4.14 and the standard deviation of ± 0.87 was ranked as the second. Whilst the mean score of ease of use 4.13 and standard deviation ± 0.82 was ranked as the least. These results indicate that the overall mean score of the students' responses was 4.17 ± 0.81.

Table 2: Descriptive Statistics of Students' Responses on Their Attitudes in terms of Items in Usefulness, Ease of Use, and Accessibility Domains

No.	Dependent Variables	Mean	Standard Deviation	Rank
	USEFULNESS ITEMS			
1	I like doing revisions through INTERACC	4.12	.84	6
2	I find INTERACC helpful.	4.27	.72	3
3	I find INTERACC useful.	4.28	.71	2
4	Activities provided in INTERACC are helpful to increase my understanding.	4.22	.75	5
5	The concept of INTERACC should be used in other courses.	4.33	.75	1
6	I look forward to using this method of learning in other classes.	4.27	.74	4
	EASE OF USE ITEMS			
7	Using INTERACC application or platform is easy.	4.26	.75	1
8	I think instructions of the activities are clear.	4.23	.71	2
9	I feel positive when submitting my assignment through INTERACC.	4.12	.79	3
10	I feel comfortable using online materials to make revision rather than traditional textbook.	3.91	1.03	4
	ACCESSIBILITY ITEMS			
11	INTERACC application is available on my smartphone.	3.80	1.13	5
12	I feel comfortable because INTERACC can be easily accessed through my smartphone or laptop.	4.33	.85	2
13	Using INTERACC in all courses that have assignment is better than paper-based assignments.	4.22	.82	3
14	I respond as quickly as possible to each assignment or question in INTERACC.	3.98	.85	4
15	I am happy because I can use INTERACC anytime anywhere.	4.35	.69	1

As shown in Table 2, overall attitudes of the students were positive toward the use of INTERACC in terms of its usefulness, ease of use, and accessibility. Majority of the students rated the usefulness and effectiveness of INTERACC quite high, with mean scores ranging from 4.12 to 4.33 out of 5 across different items. Specifically, they strongly agreed that INTERACC was helpful for revisions, understanding, and should be implemented in other courses. Besides, students expressed their agreement related to ease of use, clarity of instructions, and positive feelings about submitting assignments. However, there is slightly less agreement regarding the preference for using online materials over traditional textbooks for revision, with opinions being more varied on this aspect. Also, the availability of the application on students' smartphones are quite limited which made their speed of response to assignments

or questions through the platform was little bit slow. But overall results suggest that students generally perceived INTERACC as accessible, convenient, and preferable to paper-based assignments.

In addition to these domains, the students were also asked about their satisfaction after using INTERACC. Majority agreed that it is a good teaching methodology based on the mean value (4.38±0.71), promotes an independent learning experience (4.32 ± 0.68) and new knowledge (4.29 ±0.69), helps them better understand the concept (4.28 ±0.71), and favoured deep learning (4.11 ±0.75) dan critical thinking (4.16 ±0.71). These results suggest that INTERACC is perceived positively by the respondents and is seen as a valuable tool for learning and revisions, with potential for broader application in educational settings.

With respect to the second objective, we examined the effect of INTERACC on the performance of FRT students by analysing the pre-and post-intervention results in the subject. The results were presented according to the CLO as shown in Table 3.

Table 3: Means and Standard Deviations of the Students' Pre-and Post-Intervention Examination Results According to Course Learning Outcomes

CLO	Upon completion of this course, students should be able to:	Pre-Intervention		Post-Intervention	
		Mean	Standard Deviation	Mean	Standard Deviation
1	Explain the system and principles in the professionalization of accountants and history of accounting in Malaysia.	100	0	100	0
2	Apply the concepts of international dan Malaysian standard settings for business corporations.	86.2	8.18	89.4	5.29

Table 3 shows the students' overall scores of the pre-and-post intervention performance. The results revealed an improvement to the CLO 2 from average mean of 86.2 before the introduction of INTERACC to 89.4 percent after its implementation in the classroom. Meanwhile, the excellent achievement for the CLO 1 is maintained. This indicates that the teaching and learning intervention using INTERACC has positive impact on students' performance.

5. Discussion and Conclusion

The results of the first research question showed that students' attitudes toward INTERACC in terms of its usefulness, ease of use, and accessibility were positive. According to the results, the usefulness feature of INTERACC was ranked first, accessibility was ranked second, and ease of use was ranked as third by the students. These results came in tandem with Stathopoulou, et al. (2019), Albashtawi and Al Bataineh (2020), Campillo-Ferrer and Miralles-Martinez (2021), Haleem, et al. (2022), O.Viberg, Gronlund and Andersson (2023), and Pratiwi and Waluyo (2023) who affirmed the overall positive attitudes of students toward the use of technology or digital tools in teaching and learning.

For example, Stathopoulou, et al. (2019) tested the effectiveness of use of mobile apps in encouraging social behaviour of autism students. An Android tablet with interactive social scenarios was given for each participant and the progress of their behaviour were assessed during the 10 months of the intervention. According to their results, the study posited that the digital social stories through mobile apps can help

social skills acquisition of autism students to overcome social difficulties. Whilst, recent study by Pratiwi and Waluyo (2023) revealed digital classes incorporating digital technology such as Google Form, Quizizz, Quizlet, Kahoot!, and Socrative were more effective than traditional classes in terms of students' learning outcomes. They thus verified how digital technology might aid in the development of an efficient teaching strategy that encourages self-directed learning.

Other studies utilized Technology Acceptance Model (TAM), Unified Theory of Acceptance and Use of Technology (UTAUT), or Innovation Diffusion Theory (IDT) to investigate the acceptance of educational technology by students and other stakeholders. For instance, Albashtawi and Al Bataineh (2020), Al-Hattami (2023), and Peng, Xu and Xu (2023) described perceived usefulness, perceived ease of use, accessibility, attitude, curiosity, and self-efficacy play pivotal roles in shaping the acceptance of digital technology in educational settings. These findings are consistence with the INTERACC features that have encouraged students to using it. The attributes of digital tools have a profound impact on users' attitudes, thereby catalysing the inclination towards embracing INTERACC. Moreover, the students are from the Z generation i.e. the first groups to grow up with the formations of social media and digital technologies. Szymkowiak, et al. (2021) investigated how technology and the Internet affect the acquisition of knowledge by Generation Z. Based on their results, the respondents being more partial towards learning via mobile applications and video content over the traditional form. It also discovered that the students tended to emulate their teachers who integrated modern technologies into their curriculum and used it outside classroom hours for learning.

The integration of digital technology in education not only aids students in preparing for lifelong learning but also offers them a dynamic virtual environment where they can access digital knowledge tailored to their individual learning preferences. With the assistance of digital content production tools, which personalize the teaching and learning experience, students have the flexibility to study at their own pace and styles. Therefore, this study posited that students were able to clearly explain the system and concepts pertaining to the professionalization of accountants as well as the history of accounting in Malaysia after finishing the self-help module on the FRT course utilizing the INTERACC. When the students graduate and begin working in the sector, they should also be able to apply the concepts of both Malaysian and international standard settings for business corporations. It is also intended that this intervention, once successfully implemented in the FRT course, will be extended to other accounting courses.

We suggest for educators seeking to integrate digital tools into syllabus or courses, it's crucial to delve deep into understanding how these tools operate, meticulously craft learning scenarios/materials, and professionally execute them in the classroom. The essence lies not only in providing students with technology, but also to work together with them to foster shared, differentiated and situated learning approaches.

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