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Blended Learning in Cost Accounting 2 to Support Previously Technologically Challenged Students

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Abstract

Students at the chosen institution mostly come from rural areas and have limited experience with technology as a learning tool. Educational institutions are integrating technology into teaching, making the traditional chalk-and-talk approach less effective. The institution is integrating technology via blended learning, which merges online and in-person teaching. This involves modernizing classrooms with new teaching tools to facilitate a seamless transition. This study aimed to determine the necessary modifications in the Cost Accounting 2 course design to assist students who were previously disadvantaged in technology use, given that blended learning was the teaching approach. A quantitative approach was selected because it enables the distribution of surveys to the entire target group and minimizes sampling errors. Online Likert-scale surveys were used to collect data from participants, as they were an effective way to reach a large number of students. The survey link was shared with 400 registered students in the course, but only 110 responses were received. Most respondents believed that adding online exercises in Cost Accounting 2 helps them understand the material, similar to uploading notes and slides. Additionally, most respondents said that online content allows them to study at their own pace. Respondents also agreed that including videos in Cost Accounting 2 encourages deeper learning. The study concludes that the changes made have positively supported learning in Cost Accounting 2. However, more teaching methods are needed to successfully shift Cost Accounting 2 from traditional in-person classes to a blended learning format.

Keywords: Blended learning, Cost Accounting 2, Learning Management System (LMS), Students, Technologically disadvantaged.

Introduction

Blended learning (BL) has garnered significant attention in the Higher Education Sector (HES) as a means to equip students for the rapidly evolving job market (Mahanal et al., 2019). Utilizing technology has become essential for students to succeed in the workplace. The Fourth Industrial Revolution (4IR) prompted higher education institutions to enhance their technology infrastructure, implement new teaching and learning approaches, and eliminate barriers to innovation (Gleason, 2018).

The coronavirus (COVID-19) has been spreading globally, resulting in significant changes across nearly every sector. The HES was no exception, as many countries enforced various levels of lockdowns depending on the virus's impact. To save the academic year, many institutions that relied on face-to-face instruction were forced to adopt blended learning, also known as Emergency Remote Teaching and Learning (ERTL) (Czerniewicz et al., 2020). In South Africa, where the selected higher education institution (SHEI) is located, the government announced a nationwide lockdown on March 27, 2020 (Williams et al., 2021). As a result, the SHEI had no choice but to turn to BL to ensure the academic year was preserved.

The SHEI is situated in the eastern region of the Eastern Cape in South Africa, an area primarily characterized by rural community

landscapes. Most basic education schools still use the traditional chalk-and-talk method for teaching and learning. Hompashe (2018) mentioned that quantiles one to three are the dominant categories in the Eastern Cape province. The use of quantiles was a government initiative aimed at providing financial aid to disadvantaged schools. These schools mainly rely on government support to meet basic needs, which means they still lack access to technology in teaching and learning.

In response to these challenges, the SHEI adopted BL as one of its accepted modes of instruction. Although primarily centred around face-to-face teaching, technology was integrated through a learning management system (LMS) called Moodle. At the SHEI, this system was known as WiSe-Up. When the lockdown was implemented, the institution shifted to using LMS alongside Microsoft Teams (MS Teams) for teaching and learning.

Research question

Now that the BL was adopted by the SHEI and students from technologically learning disadvantaged backgrounds were admitted, this study seeks to address the following question:

- Which specific blended learning course design elements are perceived as most effective by previously technologically disadvantaged students in a Cost Accounting 2 course?

Literature review

The primary method of teaching and learning at the SHEI is through traditional face-to-face instruction. However, the institution has integrated technology into conventional in-person teaching to achieve its educational goals and contribute to global educational reforms. In response to the COVID-19 pandemic, SHEI introduced Emergence Remote Teaching and Learning (ERTL) (Czerniewicz et al., 2020), an optional measure that supported teaching and learning by accommodating students living in remote areas and urban centres during the lockdown. The incorporation of technology into education is often referred to as blended learning (Crawford & Jenkins, 2017). This paper provides a comprehensive review of the global literature on blended learning, with a special focus on students from historically disadvantaged backgrounds and Generation Z.

Blended Learning (BL)

Rojabi (2019) notes that the American Society for Training and Development ranks blended learning among the top ten emerging trends in knowledge dissemination. Blended learning is a complex concept that encompasses both online and in-person learning, as commonly understood (Vasudeva et al., 2019). Wang et al., (2004) state that, despite changes in methods and recipient needs, the fundamental differences between online (web-based) and face-to-face learning remain. Unlike traditional in-person education, which focuses on direct interpersonal interaction, fully online learning—also known as distance learning—places greater emphasis on self-directed study and interactions with educational materials. Technological advances have made it easier to combine in-person and online learning, allowing for human interaction in both live and asynchronous online settings. (Czerniewicz et al., 2020).

In this research, the goal was to better understand students' evaluations of available resources and their ongoing engagement in blended learning. The findings of this study could help Cost Accounting 2 instructors improve their course quality by adopting a blended learning approach to enhance knowledge acquisition. By assessing the current system's strengths and weaknesses, we can implement e-learning improvements guided by students' feedback. A recent survey by Aristovnik et al., (2020) indicates that there is a growing trend among students who have experienced the advantages of online learning, such as ease and time efficiency, compared to traditional classroom environments.

Students from technologically disadvantaged backgrounds:

The educational system of the country was significantly impacted by the processes of colonization and apartheid (Hompashe, 2018). Socioeconomic inequalities rooted in class, race, and gender greatly influence South Africa's higher education system (Kritzinger et al., 2018). People

face marginalization due to their social class and group affiliations. As a legacy of apartheid, historically disadvantaged institutions (HDIs) were established to serve the educational needs of the former Bantu homelands (Africa & Mutizwa-Mangiza, 2017).

In order to address the financial shortfall to run the school administration resulting from the racial segregation system, the government, which was elected through democratic means, implemented a subsidy system based on quantiles. Since the establishment of the system, there has been a significant presence of schools in quintiles one and three in the Eastern Cape Province (EC). These schools are publicly funded by the government, but they lack the advanced resources necessary to conduct their instructional activities. Due to their dependence on government funding, they place a high priority on essential educational materials. Implementing technology in classrooms is often impractical for many learners in under-resourced basic education schools because of limited digital infrastructure, poor internet connectivity, and insufficient teacher training. Consequently, students who progress from these schools often enrol in certain higher education institutions, particularly those historically disadvantaged, where they continue to face challenges in adapting to technology-enhanced learning environments. (Hompashe, 2018). According to Mohamedbhai (2020), students may show enthusiasm for incorporating technology once the university demonstrates its resilience in the face of adversity. According to Larremore (2021), students may exhibit resistance towards the learning process if they lack prior experience in utilizing technology as an instructional tool. The uniqueness of this study's scope of examination stems from this rationale.

Generation Z

According to Grace-Bridges (2019), Generation Z refers to a cohort of individuals born between 1995 and 2012 who have a significant advantage in terms of technology. Due to their designation as internet-savvy individuals, it is presumed that they will exhibit a propensity for engaging with the learning management system. The workplace is influenced by Generation Z, as indicated by research conducted by Seemiller & Grace (2018). According to Farrand et al., (2017), 91% of individuals believe that the level of technical advancement in a firm has an impact on their choice to work for it. Therefore, institutions of higher education must take great care to properly prepare the current generation for the demands of the twenty-first-century workforce.

Grace-Bridges (2019) noted that, regardless of the preparedness of higher education institutions (HEIs), Generation Z has joined the university. Technology has a significant role in enhancing their learning. Many institutions began adopting technology in learning to meet their needs (Beukes, 2018). The previous research conducted at the University of Pretoria primarily examined the comparison between traditional and blended learning methods, rather than specifically investigating the transition of students from technologically disadvantaged educational backgrounds from traditional to mixed learning (Nkhoma et al., 2019).

Methods

According to McCombes and Van den Eertwegh (2019), the research design employed in this study is descriptive, aiming to provide an accurate and methodical depiction of a population, situation, or phenomenon. This study enables the researcher to collect a substantial amount of data and evaluate user satisfaction from the participants' perspectives. Nevertheless, it is essential to acknowledge that this research design has a limitation that restricts the researcher's ability to establish causal relationships (McCombes & Van den Eertwegh, 2019). Therefore, a cross-sectional design will be employed to assess the population's needs, with data collected simultaneously.

Sampling procedure

The study focused on students who were registered in Cost Accounting 2 during their second year of study. The census approach was used due to its ability to effectively represent the challenges encountered by children with BL. This approach effectively obtained a thorough understanding of the general public's perception of a recently implemented instructional technique in

the domain of Cost Accounting 2 (Norbury et al., 2016). The study involved second-year students in the Department of Accounting at the specified Higher Education Institution. The course had a total of 400 students registered; however, 110 individuals completed the online survey, achieving the highest participation rate to date, making it the most successful course to date. Table 1 presents a comprehensive overview of the overall attributes of the participants:

Table 1: General characteristics of respondents

Age	Female	Male	Total	Study Level	Frequency
Below 20 years	14	9	23	Second	110
20 - 25 years	41	27	68		
25 - 30 years	7	5	12		
30 - 35 years	4	3	7		
Grand Total	**66**	**44**	**110**		**110**

Based on the table above, 110 students responded in total, with males making up 40% and females 60%. It was also observed that 82.7% of the participants were aged between 18 and 25.

Research instrument

Using the Question Pro application helped gather standardized, quantitative data, which led the researcher to create an online survey in Likert scale format for data collection. To gather data from participants, the survey was split into two separate sections. The initial dataset included demographic details such as gender, race, age, and native language. The next section focused on students' perceptions of BL, covering 15 items divided into three distinct subsections. The students' views on blended learning are categorized into four topics: Efficiency and Effectiveness, Enhancing Learning and Performance, and Ease of Use.

The questionnaire underwent testing with 10 students from the target demographic in order to mitigate and minimize ambiguity and confusion (Migliori et al., 2020). Modifications were implemented where necessary to address any potential uncertainties. The revision incorporated the feedback provided by the pilot participants. The validation of the measures and the pertinence of the information and insights uncovered during the study were of utmost importance (Ariffin et al., 2016).

Reliability and validity

The study will evaluate the following aspect of validity:

Internal consistency - The internal reliability of a test pertains to the consistency of test results, ensuring that multiple items measuring different constructs produce dependable data. The questionnaires and data collection timeframes for the focus groups in this study will be consistent. To determine the reliability of the research instrument, Cronbach's alpha coefficient was applied. A threshold of 0.70 or higher was considered indicative of acceptable internal consistency. Table 2 presents the reliability statistics, confirming the robustness of the data collected.

Table 2: Analysis of reliability

Main Theoretical Variables	Valid N	Items Used	Cronbach's α
Blended Learning Course Design	101	10	0.805**

**Significantly acceptable reliability

The results of the internal consistency test for the data collection tool are shown in Table 2. The study instrument's reliability was assessed using Cronbach's alpha coefficient, with acceptable reliability being 0.70 or higher. The Cronbach's alpha for the BL course design scale

(alpha = 0.805) indicates acceptable reliability for the research instruments.

Data collection

Before the semester break, which was from July 5 to August 8, a hyperlink to the Question Pro application was shared with all second-year accounting students via WhatsApp groups. Since all participants were familiar with the BL mode during this time, it was chosen. A weekly reminder message was sent to the group, prompting members to respond until the final week. Participants received an explanation about the purpose and confidentiality of the collected data, with the declaration information clearly displayed on the first page. They were also explicitly informed that participation was optional, and they could choose to decline.

Data analysis

Data were recorded in an Excel spreadsheet extracted from the Question Pro application and subsequently processed as shown in the figure:

Fig. 1: Data analysis

This process involved several steps. First, raw questionnaire data were cleaned in an Excel spreadsheet to address missing or incorrect entries. The cleaned data, totalling 119 responses, was then imported into SPSS v. 25 for advanced analysis. After cleaning, the response count was 110, which was considered a representative sample of the population. The data was analysed, and correlations were identified. Finally, the results were transferred to Excel to create graphs, ensuring accuracy and consistency.

Results

The study employed a descriptive, non-parametric Chi-square analysis to assess participants' perceptions of blended learning course design. Responses to various items were collected using a 4-point Likert scale, where 1 signified strong disagreement and 4 denoted strong agreement. Frequencies and percentages were calculated to interpret overall perceptions. The study identified three themes for blended learning course design: (1) online activities and lecture notes, (2) use of videos and customization to improve learning, and (3) material download. Each item's descriptive and non-parametric analysis is shown below:

Preliminary statistical analyses were conducted before further exploring the data. To gather the participants' biographical information, the researcher used a descriptive research design (see Table 3 below). Rural South Africans comprised the majority of the sample, according to the survey participants' responses.

Descriptive analysis:

The study employed a descriptive analysis to calculate the frequencies and percentages of respondents' perceptions regarding various aspects of the blended learning course design. Participants rated the items on a 4-point Likert scale, where 1 signified strong disagreement and 4 signified strong agreement. The study identified three themes for blended learning course design: (1) online activities and lecture notes, (2) use of videos and customization to improve learning, and (3) material download. The following sections provide a descriptive analysis of each challenge.

Online activities and lecture notes:

The results show that most participants concurred on the majority of items assessing their overall view of online activities and lecture notes in blended learning course design. Thus, most students agreed that incorporating online activities into Cost Accounting 2 helps them understand the course, as well as that posted notes and slides

enable them to gain a deeper understanding of the course content. In addition, most respondents agreed that they can study at a convenient time with the information available online.

Table 3: Descriptive statistics for biographical variables

Variable	Levels	df	f	Valid %
Gender	Male	1	44	40.0
	Female		66	60.0
Race	Black	1	108	98.2
	White		2	1.8
Age	18 to 20 years	4	25	22.7
	21 to 25 years		66	60.0
	26 to 30 years		12	10.9
	31 to 35 years		6	5.5
Home language	Xhosa	2	104	95.4
	English		1	0.9
	Zulu		4	3.7

N=110

Use of videos and customisation to enhance learning:

The descriptive analysis indicates that all respondents agreed on the items assessing participants' overall perceptions regarding the use of videos and customization to improve learning outcomes. Thus, most respondents agreed that the use of videos in Cost Accounting 2 promotes deeper learning, as well as customizing Wise-Up features to give them a textbook-like appearance, is an innovative idea. This was also a similar case where most respondents agreed that videos available online make students understand the course material much better, as they can play back and pause where needed. The frequencies also indicate that students agree that the learner guide should include video link notices, as well as that the students' collaboration application should be used on Wise-Up.

Downloading material

The initial descriptive results indicate that most participants concurred on all aspects regarding their overall perceptions of downloading materials in the blended learning course design. The students agreed that the period to download the learning aid should be clearly stated, and that marks should be awarded for downloading any study aid.

Non-parametric Chi-square analysis:

The initial analysis involved a non-parametric Chi-square test to evaluate the design of the blended learning course. This test aimed to assess the effectiveness of modifications made to Cost Accounting 2, specifically to support students from technologically disadvantaged backgrounds in the context of blended learning. Responses were measured on a two-point Likert scale, ranging from 1 (disagree) to 2 (agree).

Online activities and lecture notes:

A non-parametric Chi-square test for equal proportions was performed to determine if there was statistically significant evidence supporting the participants' overall view with certainty. Table 4 shows the results of the Chi-square test. Most of the participants (n = 81; 75.7 percent) felt that integrating online exercises in Cost Accounting 2 helps students grasp the course, which was statistically significant (Chi-square = 28.271; p = 0.0001). Many of the participants (n = 100; 94.3 percent) agreed that uploaded notes and slides assist students in gaining a deeper understanding of course content (Chi-square = 83.358; p = 0.0001), according to the Chi-square test (Chi-square = 83.358; p = 0.0001). Finally, with course content available online, students can study whenever it is convenient for them (Chi-square = 84.346; p = 0.0001). The findings are summarised graphically in Figure 4.

Table 4: Non-parametric Chi-square statistics on participants' general perceptions of online activities and lecture notes.

Item	Do you agree with the following statements?	Disagree	Agree	Chi-Square	p-value
1	Incorporation online activities in Cost Accounting 2 made me to understand the course.	n = 26 (24.3%)	n = 81 (75.7%)	28.271	<0.0001*
2	Posted notes and slides make me gain a deeper understanding of the course content.	n = 6 (5.7%)	n = 100 (94.3%)	83.358	<0.0001*
3	I can study at a convenient time with the information available online.	n = 6 (5.6%)	n = 101 (94.4%)	84.346	<0.0001*

N=110, (*) - Differences that are statistically significant (at Alpha = 0.05). The statements were graded on a two-point scale of 1 (disagree) to 2 (agree) (agree).

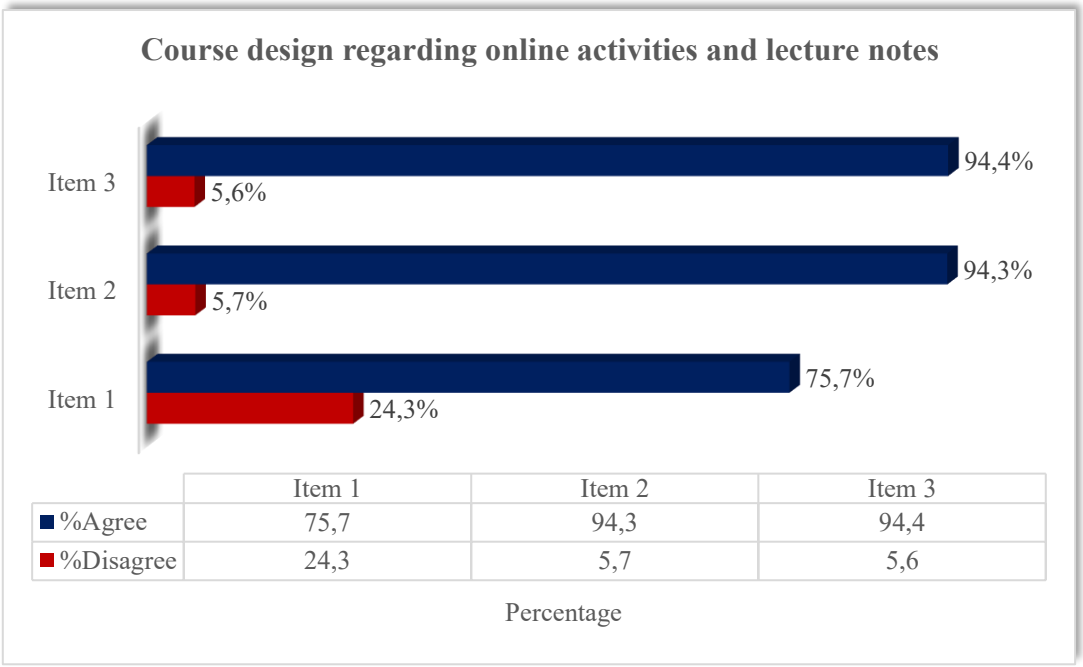

Fig. 2: General students' perception of online activities and lecture notes.

Use of videos and customisation to enhance learning

To determine if there was statistically significant evidence supporting the participants' overall view with certainty, a non-parametric Chi-square test for equal proportions was used. The results are shown in Table 5. Many participants believed that incorporating videos in Cost Accounting 2 enhances deeper learning (n = 85; 81.0%; Chi-square = 40.238; p = 0.0001). Furthermore, there was statistically significant evidence that most respondents thought that customizing Wise-Up features to seem like textbook content is a promising idea (n = 103; 96.3 %; Chi-square = 91.598; p = 0.0001). Most participants also stated that being able to playback and pause videos recorded from online sessions helps students grasp course material significantly

better (n = 101; 94.4 %; Chi-square = 84.346; p = 0.0001). The data also suggested that the learner guide should contain video links notification where there is a video to be seen (Chi-square = 81.815; p = 0.0001) and that students' collaboration through the Wise-Up application should be utilised (Chi-square = 83.358; p = 0.0001). Figure 5 depicts the graphical presentation.

Table 5: Non-parametric. The utilization of videos and personalization to increase learning yielded Chi-square results on the general perception of participants.

Item	Do you agree with the following statements?	Disagree	Agree	Chi-Square	Exact p-value
1	Use of videos in Cost Accounting 2 did promote deeper learning	n = 20 (19.0%)	n = 85 (81.0%)	40.238	<0.0001*
2	Customising Wise-Up features to have a textbook content look is a good idea.	n = 4 (3.7%)	n = 103 (96.3%)	91.598	<0.0001*
3	The videos available online make me understand the course material much better as I can playback and pause where needed.	n = 6 (5.6%)	n = 101 (94.4%)	84.346	<0.0001*
4	The learner guide should have video links, and note where there is a video to be watched.	n = 7 (6.5%)	n = 101 (93.5%)	81.815	<0.0001*
5	Students' collaboration through the Wise-Up application must be used.	n = 6 (5.7%)	n = 100 (94.3%)	83.358	<0.0001*

N=110, (*) - Differences that are statistically significant (at Alpha = 0.05). The statements were graded on a two-point scale of 1 (disagree) to 2 (agree) (agree).

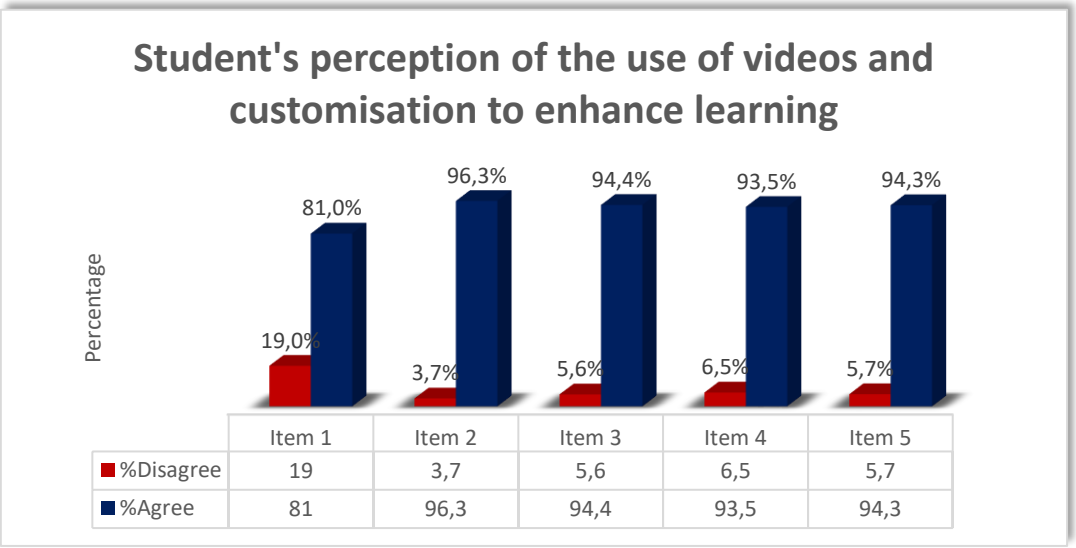

Fig. 3: General students' perception of the use of videos and customization to enhance learning

Downloading material

Table 6 displays the results of the Chi-square test. The graphical presentation is shown in Figure 6. Most of the participants (n = 92; 86.0 %) considered that the time range for downloading learning aids should be explicitly provided, according to statistical evidence (Chi-square = 55.411; p < 0.0001). Finally, the Chi-square test revealed statistically substantial evidence (Chi-square = 7.860; p = 0.0001) that many of the participants (n = 68; 63.6 %) agreed that downloading any study aid should be awarded

with points (Chi-square = 7.860; p = 0.0001). Figure 6 depicts the graphical presentation.

Table 6: Non-parametric. The Chi-square test was used to determine how participants felt about downloading materials in general.

Item	Do you agree with the following statements?	Disagree	Agree	Chi-Square	p-value
1	The period to download the learning aid should be clearly stated.	n = 15 (14.0%)	n = 92 (86.0%)	55.411	<0.0001*
2	Marks should be awarded for downloading any study aid.	n = 39 (36.4%)	n = 68 (63.6%)	7.860	0.005*

N=110, (*) - Differences that are statistically significant (at Alpha = 0.05). The statements were graded on a two-point scale of 1 (disagree) to 2 (agree).

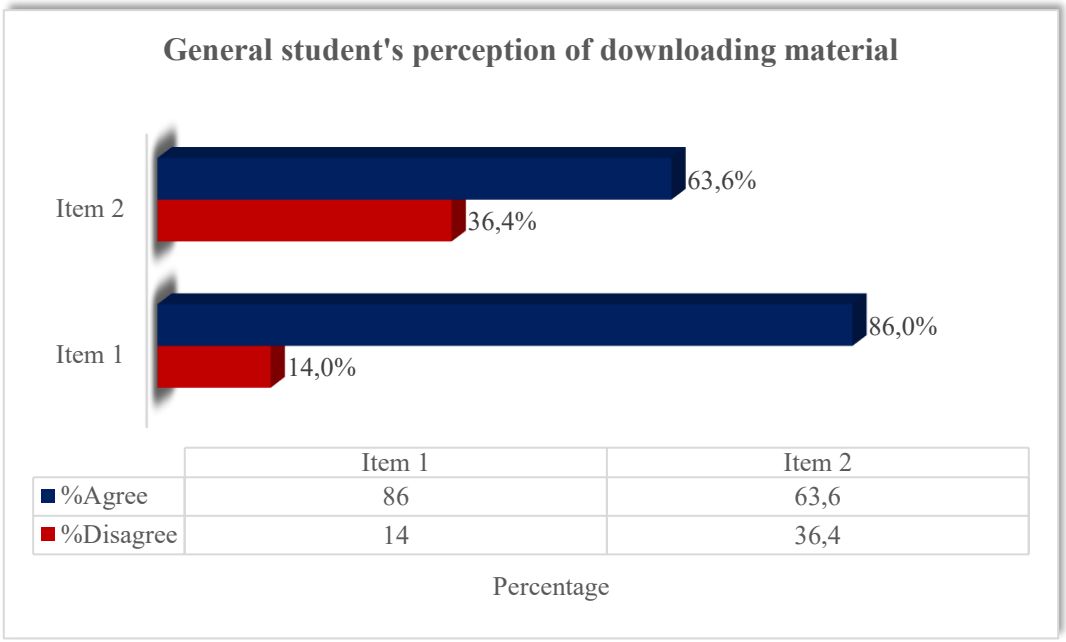

Fig. 4: General students' perception of downloading material.

Discussion

To gain a thorough understanding of participants' perspectives on the design of blended learning courses, a descriptive analysis was performed. This involved calculating the frequencies and percentages to evaluate respondents' assessments of various aspects.. The investigation on the design of hybrid learning courses yielded three distinct themes. The available options include: (1) online exercises and lecture notes, (2) video use and customization to enhance learning, and (3) downloading of materials.

Web-based activities and lecture materials:

Most participants agreed that incorporating online activities into Cost Accounting 2 enhances their understanding of the course, while using uploaded notes and slides helps deepen their grasp of the material. Additionally, many participants believe that the online resources available to them provide them with the opportunity to learn at their own pace.

Utilising videos and customization to augment the learning experience

The participants agreed that including videos in Cost Accounting 2 enhances understanding, as does customizing Wise-Up features to align with textbook content. Similarly, many participants believe that internet videos help students better understand course material because they can replay and pause as needed. According to the data, students agree that the learner guide should include video links to notify them when videos are available. Additionally, students' involvement in the Wise-Up program should be encouraged.

Obtaining content

There was a consensus among participants that it is crucial to clearly specify the time limit for downloading the learning aid and that any downloaded study aid should earn points. This phenomenon might be viewed as students from educational backgrounds that were previously disadvantaged in technology showing a positive attitude towards blended learning.

Recommendation and conclusion

The study recommends necessary amendments to the Cost Accounting 2 module to ensure full alignment with BL requirements. The design of the student guide should clearly outline the items students need to access online and those they will cover during face-to-face sessions. If learner guides are shared as digital copies, hyperlinks should be used to link to the online information. The study also recommends integrating learner guides with the learning management system to facilitate online assessments for learning.

As the COVID-19 pandemic has significantly altered the traditional teaching and learning methods, blended learning (BL) is recommended as an effective mode to facilitate education (Rahiem, 2020). Current and future generations appear to have no difficulty engaging with technology for learning; in fact, they are eager to adopt this approach. However, further research could explore the preferences of the minority who favour other modes of learning. Additionally, alternative methodologies could be employed in future studies to gain more comprehensive insights into BL from students.

Disclosures

Conflict of interest

The authors declare no conflict of interest

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