Research Paper



Exploring learning outcomes in Financial accounting: a quasiexperimental study using Multiple Choice Question (MCQ) Test in blended learning environment

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ABSTRACT: This study investigates the multiple choice question (MCQ) assessment tool to measure the performance of undergraduate students in Social Science degree programs, in a small course setting by comparing the control group and the experimental class. The research is quantitative and 60 students participated in an experiment, 30 in the traditional and 30 in the blended class in a Business Administration department in Greece, in the Financial Accounting course of the second semester of studies. The findings of the research showed that the intervention of the blended teaching approach in the experimental class was positive and was an important factor in improving performance, giving a greater number of correct answers compared to the students who participated in the control group. The findings of this study contribute to the academic community by highlighting the possibilities provided by a multiple-choice knowledge test as an assessment method and how its application can contribute to the measurement of student performance in accounting subjects taught at university institutions. The originality and value lies in the design and implementation of the knowledge test in two different periods (beginning and end of the semester) in order to identify the level of "change" of students involved in blended learning environments.

KEYWORDS: Financial Accounting, MCQ, Blended learning, Quasi-experimental, University, Professors, Students

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I. INTRODUCTION

In recent decades, multiple-choice tests have been used by teachers as an assessment tool, usually of the level of knowledge acquired by students during courses. These tests have been found to offer some benefits such as objectivity of assessment, ease of correction and feedback in a short period of time (McAllister and Guidice, 2012; Monrad et al., 2021). For the effectiveness of these tests, their correct design and implementation are considered important factors. In order to have a more holistic approach, they can be combined with other assessment methods, for example with mid-term student progress exams or final exams (Massoudi et. 2017; Georgakopoulos et al., 2023).

Students participating in financial accounting courses which are usually held during the first year of studies, are decisive in their academic career (Duff, 2004; Nsor-Ambala, 2022). In addition, university institutions and departments of Social Sciences should align with labor market needs and accounting courses with the modern requirements of the accounting profession (Awayiga, 2014; Asonitou, 2015; Lim et al., 2019; Kyriakopoulos, Ntanos and Asonitou, 2020).

According to Jordan and Samuels (2020) one of the goals of higher education is to produce high quality learning outcomes. A learning outcome can be a specific skill, behavior or level of knowledge that students are expected to demonstrate after a period of instruction. In higher accounting education, there are scientific discussions on the adoption of a more constructive framework for enhancing learning outcomes, student satisfaction, integrating the use of technology in teaching (Cheng and Ding, 2021).

It is observed that the academic community is increasingly integrating the blended teaching approach even in accounting courses, as literature reports that its effective integration and application improves learning outcomes, student satisfaction and retention while at the same time maximizing their involvement. In a broader context, blended learning promotes a more student-centered character and creates an experiential learning environment that meets the modern needs of students in the digital age we are living in (Chandra and La, 2020; Kottara et al., 2024a).

In studies concerning accounting education, researchers usually examine variables such as performance (Nsor-Ambala, 2022). Performance indicators such as learning outcomes are drawn from the syllabus of the course, and most of them concern the final grades received by the students (Everaert, Opdecam and Maussen, 2017; Kottara et., 2024b).

Abroad, blended learning in accounting has been investigated and it has been found that financial accounting is a critical first-year course at undergraduate level that includes fundamental knowledge, concepts and principles. However, despite the scientific papers that have been published there is a lack of corresponding research especially in accounting courses (Williams and Brown, 2019; Wu and Tsai, 2020).

The contribution of the present research lies in the fact that it comes to fill this gap that appears both abroad and in Greece. In addition, most studies focus on the scientific tools of questionnaires, interviews or observations and less often on the application of a Multiple Choice Question (MCQ) Test in the subject of accounting (Coetzee, 2018; Asonitou et al., 2020).

Through proper design and implementation, multiple-choice tests can be a valuable tool for improving the quality of higher education.

The originality and value lies in the design and implementation of the knowledge test as a measurement and evaluation tool in two different periods (beginning and end of the semester) in order to identify the level of "change" of students involved in a hybrid educational environment, through a semi-experimental research. The two different periods act as safeguards in comparing the results and avoiding the responses bias.

The main purpose of the research is to examine an assessment tool such as the knowledge test through the possibility of choosing correct answers, comparing two classes of accounting students (the control group and the experimental class) through a semi-experimental design, where two research questions were asked:

RQ1. "Is there a statistically significant difference in the level of knowledge and skills of the students of the traditional and blended class at the beginning of the semester?".

RQ2. "Is there a statistically significant difference in the level of skill knowledge of traditional and blended class students at the end of the semester?".

The structure of the research is as follows: in the second part the literature review is presented, in the third the methodology and design of the experiment, the findings are presented in the fourth, while in the fifth the discussion and conclusions follow, in the sixth the limitations with suggestions for further research, with a final section on the sources used by the researchers.

II. LITERATURE REVIEW

Multiple Choice Test

Accounting professors are constantly looking for ways of teaching and assessment, which will enable students to strengthen and strengthen the knowledge and understanding of basic accounting concepts (Clarke, 1995). The multiple question test has previously been the subject of research in an undergraduate accounting course and it was found that asynchronous learning platforms (Learning Management System) are, in addition to a means of posting educational content, and an evaluation method through the creation of a quiz/test (Massoudi, et al., 2017). The findings of this research showed that there is a positive relationship of the basic concepts of financial accounting with the level of understanding by the students as they responded satisfactorily, giving a large number of correct answers. In addition, there was a correlation of the students' performance with other variables such as gender, age, semester of study and their participation in remedial teaching.

Al-Nawaiseh et al., (2017) state that, it is very important that teachers in higher education consider different types of assessment to measure student performance including the format of a multiple choice question test on general accounting knowledge. Additionally, the use of different accounting student performance measurement tools allow for comparative analyses. The researchers themselves consider the teaching approach they use to be a very important aspect, as it has been established that the most modern methods such as blended learning have a positive effect on students' learning outcomes.

In the era of COVID-19 there was a new context in distance teaching and hybrid learning (Ntanos, et al., 2022), in order not to interrupt the academic process, where both the content of the accounting courses and the final exams of the semester were conducted in a digital educational space several times in the form of a multiple-choice test (Kottara et al., 2024b).

However, there were various debates during the time of the pandemic around the world about the ethics of exams where subsequent research by Moore, Nguyen and Stamper, (2021) reported that no negative effects were detected and that the flow of online exams was the same as their counterparts in class. Moreover, the issue of reliability could be raised for the exams taking place traditionally in class.

Geiger, Middleton and Tahseen, (2021) focused on the final general accounting knowledge score and the research findings showed that it is very important for teachers to be able to design educational activities and exams based on MCQs in order to identify the level of knowledge and skills of students. They also consider it extremely important that this knowledge aligns with the needs of the accounting profession, i.e. more technical.

To this day, it is common for professors to use multiple choice questions (MCQs), where their students come to answer even a case study and a problem scenario by choosing the correct one from 4 or 5 indicative answers. MCQs are designed to be objective, have a correct answer, which can be revealed immediately if correct, while giving an instant feedback. Additionally, MCQs can provide a wide range of educational content if designed appropriately, even assessing semester-long undergraduate or graduate accounting courses (Nasu, 2024).

Financial Accounting

Accounting deals with the communication of financial reports and financial transactions of a specific organization or business, where internal and external users use them both for making sound decisions and for investment or other sustainable purposes (Choo, 2020). Also, financial accounting contributes to the process of collecting, recording, presenting and analyzing financial information for users of companies' financial statements (Miller and Power, 2013; Andrade et al., 2022). More specifically, it is that aspect of accounting that is related to the interpretation of information derived from an entity's financial statements to the potential users of the information (Aldamen et al., 2015). Through the teaching of accounting, employers believe that graduates acquire highly analytical problem-solving skills, business awareness and basic accounting technical knowledge useful for their careers (Kavanagh and Drennan, 2008; Kottara et al., 2024c).

Blended learning in Accounting

Several scholars report that research on the application of blended learning in accounting is quite limited (Wong and Tatnall, 2009; Smith, 2012; Grabinski, Kedzior and Krasodomska, 2015; Krasodomska and Godawska, 2021). Traditional teaching approaches in accounting education reveal conflicting results and vary (Dowling, Godfrey and Gyles, 2003; McCarthy, Kusaila and Grasso, 2019; Lytras et al., 2022). According to Nortvig et al., (2018) there is a gap between traditional and blended classrooms in terms of lesson interaction and effectiveness (Wong, 2012; O'Keefe, Rienks and Smith, 2014; Fortin et al., 2019).

The literature on students' views on the use of technology is not well documented, while some studies have attempted to examine students' attitudes towards the implementation of blended learning (Wuensch et al., 2008; Paechter and Maier, 2010; Fearon et al., 2012; Warren and Young, 2012; Beatson et al., 2020).Studies of students' perceptions of the blended learning approach in accounting reported positive findings regarding their levels of engagement and participation in the courses (Abraham, 2016; Oordt and Mulder, 2016). In terms of knowledge, understanding and skill development, blended class students have a greater interest in the content of the accounting course (Chen and Jones, 2007; Grabinski, Kedzior and Krasodomska, 2015; Asonitou, 2020; Asonitou, 2022).

However, a lack of research on blended learning is evident in introductory accounting courses (Halverson et al., 2012; Graham, 2013). It is very important to have research on the effect of the application of blended learning in university accounting courses as a large research gap is identified (Kottara et al., 2024c).

III. METHODOLOGY

In this section, the Research Design of the current study, carried out in the "Financial Accounting" course, in the Department of Business Administration of the University of Western Attica in Greece, is presented. Participation in the experiment was voluntary, a total of 60 students participated with pseudonyms to ensure the protection of personal data.

The impact of the blended teaching approach was examined by comparing two groups of students: a) the experimental group (blended learning) and b) the control group (traditional classroom - face-to-face teaching).

The population concerns 176 students enrolled in the course, while the sample consists of the 60 participants. The main criterion for admission to the study was the prerequisite enrollment in the Advanced Financial Accounting course, while their inclusion in the groups was done by the process of convenience sampling. The research adopts quantitative methods for the collection and analysis of data and at the same time is exploratory, thus aiming at a deeper approach and understanding of the subject.

Scientists claim that quasi-experimental research is related to an experiment, where there are manipulations of variables and corresponding measurements, without the random definition of subjects in the experimental conditions that are compared, such as in the experimental class and the control group. In several cases it is used by researchers to document a causal relationship, but they do not randomly assign the experimental condition. Therefore, the most testable way to measure the effects of an independent variable on a dependent one is the quasi-experimental design (Singleton, 1999).

In this specific research, the semi-experimental design is followed with the comparison of the two classes that make up the experimental group (blended environments) and the control group (control group). These groups, in contrast to the experimental design, are not equivalent, since the students join the two classes following their own decision and choice of which class they wish to participate in. The semi-experimental method is one of the main quantitative research methods, where one set of variables is kept constant (control group), while the other set of variables (experimental group) is measured as an object of experiment (Wiersma, 2009). The multiple-choice test questions were drawn from the course syllabus with six main subject areas:

Table 1.MCQ Knowledge Question Sections

Mult	iple choice question topics
•	Introductory questions for the Accounting records (books) and Accounting data (documents) of the
Double	Entry System.

- Accounting treatment of commercial enterprises.
- Income and expense accounts
- Settlement of Accounts and end of year work (determining the result of the period after taxes).
- Accounting circuit.
- Financial statements

In each topic, five representative multiple-choice questions were formulated which were successively connected to each other.

3.1 Data collection in quantitative research

Quantitative data from the questionnaire and the research knowledge and skills test were collected and processed using SPSS v.23 software, which is a powerful and useful tool in Social Science research (Statistical Package for Social Sciences). The knowledge and skills test consists of 20 multiple-choice questions and was completed by the participants of the experiment in the first and last lesson (handwriting by living in the room), while a comparison was made through the paired t-test statistical method. The tests were anonymous and the collection was secured so as not to identify the students.

3.2 Data Processing and Data Analysis

All data were initially entered into excel spreadsheets, however beyond the entry, there was a second check of the data to confirm that all data was accurately recorded and analyzed using the SPSS v.23 statistical program.

3.3 Measurement of the Knowledge and Skills Test

The measurement had two different periods, the first concerns the control of the knowledge test at the beginning of the semester and the second at the end. For the first case, the question was formulated as follows: "Is there a statistically significant difference in the level of knowledge and skills of the students of the traditional and blended class at the beginning of the semester?".

The Independent Samples t-test for Equality of Means was applied to this question. The independent samples t-test compares the mean values of a continuous variable between two independent samples.

The null hypothesis of the test was that the two mean values of the independent values do not show a statistically significant difference and are considered equal. The specific control is carried out under the following conditions:

- The two samples are independent
- There are no outliers
- Observations follow normal distribution
- The two samples have equal variances

In the second period which reflects the end of the semester there is the following question: "Is there a statistically significant difference in the level of knowledge and skills of the traditional and blended class students at the end of the semester?".

The non-parametric Mann-Whitney U Test was performed, which is used as an alternative to the Independent Samples t-test for Equality of Means when the assumption of normality does not hold in the data. Specifically,

the nonparametric test and the null hypothesis of the test focuses on the fact that the two samples come from the same distribution.

IV. FINDINGS

Indicative demographic characteristics of the participants in a research are gender, age, ethnicity, educational level, profession, economic and family status (Apostolou et al., 2020). However, demographic information was limited to gender and age following a relevant directive from the University's Research Ethics and Ethics Committee in order not to identify participants.

4.1 Demographics (Gender and Age)

Female students hold the majority in traditional and blended classes with a percentage of 61% and 77% respectively. Whereas, the rates for male students are 39% and 23% respectively.

	Table 2.Gender									
	Gender * Class Crosstabulation									
	% within Class									
		Class		Total						
		Traditional	Blended							
Gender	Female	61%	77%	69%						
	Male	39%	23%	31%						
Total		100%	100%	100%						

The age range of the students is up to 24 years, in the traditional 79% and in the blended 87%.

Age * Class Crosstabulation % within Class									
		Class		Total					
		Traditional	Blended						
Age	Up to 24	79%	87%	83%					
	25-34	18%	13%	16%					
	35-54	4%		2%					
Total		100%	100%	100%					

Table 3.Age

4.2 Knowledge and Skills Test Findings at the Beginning of the Semester

The following is the statistical analysis regarding the first research question and whether there is a statistically significant difference in the level of knowledge and skills of traditional and blended class students at the beginning of the semester.

The test consists of 20 questions, while the correct answers given were recorded and a continuous variable was created which had values from 0 to 20, where 0 means that the student did not answer any question correctly and 20 means that he answered all the questions correctly. To answer the first research question, the test of equality of mean values in independent samples was carried out, with the Independent samples t test.

1. The two samples are independent since the two classes are composed of different students and none of them participates in both classes at the same time.

2. Checking for outliers is done graphically using a boxplot. As can be seen in the following diagram, there are no outliers and therefore this control condition is met.

3. The test of normality in the continuous variable "number of correct answers" for the observations of the two samples separately, was done based on the Kolmogorov-Smirnov test.

• For the Traditional class, the p-value of the control was calculated equal to 0.199, greater than the level of significance α =5%, so the null hypothesis that the data follow the normal distribution is not rejected.

• For the Blended class the p-value was found to be equal to 0.04 marginally less than the significance level α =5% and therefore it seems that marginally also in this class the data follow the normal distribution.



Graph (1) Initial Knowledge and Skills Test Answers

 Table 4. Knowledge and Skills Test Normality Check

Tests of Normality												
Kolmogorov-Smirnov ^a Shapiro-Wilk												
	Class	Statistic	df	Sig.	Statistic	df	Sig.					
Number of correct	Traditional	,131	30	,199	,965	30	,422					
answers	Blended	,163	30	,040	,939	30	,087					
	a. Lilliefors Significance Correction											

4. Testing for equality of variances between the two samples was performed with Levene's Test, where the null hypothesis of the test is that the two populations have equal variance. The p-value of the control was calculated equal to 0.923 greater than the significance level α =5% and therefore the null hypothesis is not rejected.

Table 5.Hypotheses testing for Knowledge and Skills Test

Levene's Test for Equality of Variances						
F	Sig.					
,009	,923					

Given that all 4 basic conditions of the independent samples t test are met, the descriptive measures for the continuous variable of the two classes were calculated. The average value for the traditional class was about 14 correct answers (13.8) and for the blended class about 13 (13.47). The standard deviation for both classes is 3. The minimum correct answers in the traditional class are 7 and in the blended class 6, while the maximum

values are 19 and 18 respectively. Also, the 95% confidence interval of correct answers in the traditional classroom is between 13 and 15 and in the blended classroom between 12 and 15.

	Descriptives Number of correct answers to 20 questions													
95% Confidence Interval for Class N Mean Std Deviation Mean Minimum														
	1	Wiean	Sta. Deviation	Lower Bound	Upper Bound	Willingth	Waximum							
Traditional	30	13,83	3,007	12,71	14,96	7	19							
Blended	30	13,47	2,980	12,35	14,58	6	18							
Total	60	13,65	2,973	12,88	14,42	б	19							

Table	6 Number	٥f	correct	anestions	in	the	Knowledge	and	Skills	Test
rable	0.INumber	01	correct	questions	ш	une	Knowledge	: anu	SKIIIS	rest

The test for equality of means for independent samples has a p-value equal to 0.637 greater than a =5% significance level. Therefore, the null hypothesis of equality of means is not rejected, as there is no statistically significant difference in the level of knowledge between the two classes.

		Inde	pender	nt Sample	s Test						
		t-test for Equality of Means									
							95% Co	nfidence			
				Sig. (2-	Mean	Std. Error	Interva	l of the			
		t	df	taile)	Difference	Difference	Diffe	rence			
							Lower	Upper			
Number of correct answers	Equal variances assumed	,474	58	,637	,367	,773	-1,180	1,914			

Table 7.Independent Samples test for Knowledge and Skills Test

4.3 Knowledge and Skills Test Findings at the end of the Semester

The following is the statistical analysis regarding the second research question and whether there is a statistically significant difference in the level of skill knowledge of traditional and blended class students at the end of the semester. The Mann–Whitney U test non-parametric test, in which the data are not required to follow a normal distribution, was performed. Based on the test, a statistically significant difference was found between the distributions for the two classes, with the blended class performing better.



The normality test of the continuous variable "number of correct answers" for the observations of the two samples separately, was done based on the Kolmogorov-Smirnov test.

• For the Traditional class, the p-value of the control was calculated equal to 0.182, that is greater than the α =5% significance level, so the null hypothesis suggesting the data follows the normal distribution is not rejected.

• For the Blended class the p-value was found to be equal to 0.015 less than the α =5% significance level and therefore in this class the data does not follow a normal distribution.

Tests of Normality												
	Class	Kolmo	gorov-Sn	nirnov ^a	Shapiro-Wilk							
	<u>Class</u>	Statistic	df	Sig.	Statistic	df	Sig.					
Number of correct	Traditional	,134	30	,182	,961	30	,336					
answers	Blended	,180	30	,015	,904	30	,010					
a. Lilliefors Significance Correction												

Since the two basic conditions of the independent samples t test are not met, a non-parametric test (Mann-Whitney U Test) was performed to test if there is a statistically significant difference in the number of correct answers between the two classes. However, we present the basic descriptive statistics for the continuous variable in each class. The average value for the traditional classroom is about 14 correct answers (14.47) and for the blended class about 17 (16.73). The standard deviation for the traditional class is about 3 and for the blended class 2.

The minimum correct answers in the traditional class are 8 and in the blended class 10, while the maximum values are 19 and 20 respectively. Finally, the 95% confidence interval of correct answers in the traditional class is between 13 and 16 and in the blended class between 16 and 18.

Table 9.Number of correct answers of the Final Knowledge and Skills Test

	Descriptives												
			Numbe	er of correct	answers								
			644		95% Confidence Interval f	or							
Class	Ν	Mean	Sta.	Std. Error	Mean	Minimum Maximum							
			Deviation		Lower Bound Upper Bour	nd							

Traditional	30	14,47	2,921	,533	13,38	15,56	8	19
Blended	30	16,73	2,288	,418	15,88	17,59	10	20
Total	60	15,60	2,842	,367	14,87	16,33	8	20

The null hypothesis of the test is that the distribution of correct answers is the same between the two classes. The p-value of the control was calculated equal to 0.002 less than the 5% significance level. The null hypothesis of the test is rejected, as there is a statistically significant difference of correct answers between the two classes.

Table 10. Comparison of initial and final Knowledge and Skills Test

Test Statistics ^a				
	Number of correct answers			
Mann-Whitney U	238,000			
Z	-3,159			
Asymp. Sig. (2-tailed)	,002			
a. Grouping Variable: Class				

Table 11.Comparison of average correct answers Knowledge and Skills Test

		Ranks			
	Class		N	Mean Rank	Sum of Ranks
Number of correct answers	Traditional		30	23,43	703,00
	Blended		30) 37,57	1127,00
	Total		60)	

Based on the data presented, it became clear that in the blended class the number of correct answers is greater than that in the traditional class, that is, the performance in the knowledge test at the end of the semester of the students in the blended class is much better than those in the traditional class.

V. DISCUSSION AND CONCLUSIONS

The present study examined the level of knowledge and skills among the students of the traditional and blended class at the beginning and at the end of the semester for the undergraduate course of Financial Accounting. The Multiple-choice knowledge tests, have been used for many decades, but because students' needs are constantly changing it is extremely critical that they be redesigned to cover a wider range of accounting knowledge (Clarke, 1995; Kottara et al., 2024c). Also, it is possible to complete them online through synchronous and asynchronous education platforms, directly providing the results of student performance (Massoudi, et al., 2017).

The results of the research converge with the opinions of other researchers so far, as these tests can be answered very quickly and easily by accounting students be combined with other educational assessment tools (ALzoub and Assaf, 2017).

The aftermath of COVID-19 created a more digital educational environment and in several university institutions exams were conducted exclusively using MCQs (Moore, Nguyen and Stamper, 2021).

There have been several academic debates, and the pandemic crisis has raised issues as to whether just the use of an educational assessment tool, and especially at the concept of distance learning, can create the conditions for reliability. Also, Geiger, Middleton and Tahseen, (2021) thoroughly explained how student performance can be reliably scored with an MCQ test either in- person learning or remotely without the use of a parallel assessment tool.

The adoption of these MCQ tests is very common in blended learning and if properly designed and implemented, they are very useful educational assessment tools, with immediate feedback and clear identification of students' level of accounting knowledge (Nasu, 2024).

In addition, in terms of the opinion that teachers should not use them as the main evaluation tool as through these tests the practical abilities of students cannot be easily explored, however if designed correctly the test can be the only reliable evaluation tool as acknowledged by the current research and its findings.

It is important that the questions facilitate the evaluation of the deep understanding (In-depth Understanding) of the course content. In accounting courses, this possibility of multiple choice tests usually works in conjunction with some project or other educational activities during the semester.

However, despite the fact that research has been conducted to date on the field under consideration, none has focused on the comparative study and analysis of MCQs in two different periods, such as the beginning and the end of the semester. This comparison realized through the present research shows a new perspective in the use of MCQs. The two different periods of completion of the same MCQ by students participating in the traditional and the blended class, help the scientific community to understand the intervention of the blended teaching approach, through reliable statistical comparison data.

Through the research questions of this research that focus on whether there is a significant statistical difference in the level of knowledge and skills of the students of the traditional and blended class at the beginning of the semester and at the end of the semester, the following was found.

It appeared that at the beginning of the semester there was a difference of more correct answers given by the students in the control group (traditional class), however this changed at the end of the semester as most correct answers came from the participants in the experimental group (blended class).

It was found at the beginning of the semester during the spring semester of 2023 that the average in the traditional class was about 14 correct answers (13.8) and in the blended one about 13 (13.47). On the other hand, at the end of the semester, the answers to the Knowledge and Skills Test of the traditional class were about 14 correct answers (14.47), while for the blended class about 17 (16.73), with a clearly improved image and higher percentages of students who attended the Financial Accounting course with the blended teaching approach. It is noteworthy the positive intervention of the blended teaching approach which was a key factor of "change - improvement" for the course, improving the knowledge and skills of the students compared to those who participated in traditional teaching.

It became clear that the implementation of hybrid teaching is a driving force for the students and this can be seen through the evaluation of their knowledge by completing the multiple choice test. Today, more than ever, the continuous assessment of students is considered very important that extends beyond the final exams.

The integration of assessment tools such as quizzes, tests, projects in the educational process is of major importance, as both from the literature and from the conduct of the experiment it was identified that this whole mixture of assessment methods contributes positively to the learning outcomes of the students, especially with the combination of modern teaching methods (blended teaching).

VI. LIMITATIONS AND RECOMMENDATIONS FOR FURTHER RESEARCH

Every research has limitations, so this one focused on a specific first-year accounting course, that took place in the department of Business Administration at the University of Western Attica in Greece. Given the bibliographic review which highlighted the issue of the lack of corresponding research, it is deemed necessary to carry out new studies in order to either compare or strengthen the results of the present research. For these reasons, conducting research in larger populations and samples is necessary, as well as at different levels of accounting education studies (undergraduate and postgraduate) in a blended learning environment and with methodological tools combined (the use of MCQs with questionnaires and interviews).

REFERENCES

- [1]. McAllister, D., and R. Guidice, (2012). This is only a test: a machine-graded improvement to the multiple-choice and true-false examination, Teaching in Higher Education 17, 193–207.
- [2]. Monrad, S. U., Bibler Zaidi, N. L., Grob, K. L., Kurtz, J. B., Tai, A. W., Hortsch, M., Gruppen, L. D., & Santen, S. A. (2021). What faculty write versus what students see? Perspectives on multiple-choice questions using Bloom's taxonomy. Medical Teacher, 43(5), 575–582. https://doi.org/10.1080/0142159X.2021.1879376
- [3]. Massoudi, D., Koh, S., Hancock, P. J., & Fung, L. (2017). The Effectiveness of Usage of Online Multiple Choice Questions on Student Performance in Introductory Accounting. Issues in Accounting Education, 32(4), 1-17. https://doi.org/10.2308/iace-51722
- [4]. Georgakopoulos, I., Piromalis, D., Ntanos, S., Zakopoulos, V., Makrygiannis, P. (2023) A Prediction Model for Remote Lab Courses Designed upon the Principles of Education for Sustainable Development. Sustainability 15(6):5473. https://doi.org/10.3390/su15065473
- [5]. Duff, A. (2004). Understanding academic performance and progression of first-year accounting and business economics undergraduates: The role of approaches to learning and prior academic achievement. Accounting Education: An International Journal, 13(4), 409–430
- [6]. Nsor-Ambala, R. (2022). The impact of collaborative learning approaches on assessment outcomes in an accounting theory class. Accounting Education, 31(1), 1-38.
- [7]. Awayiga, J. Y., Onumah, J. M., & Tsamenyi, M. (2014). Knowledge and skills development of accounting graduates: The perceptions of graduates and employers in Ghana. In Personal Transferable Skills in Accounting Education (pp. 137-156). Routledge.

- [8]. Asonitou, S. (2015). The evolution of accounting education and the development of skills. In 11th Interdisciplinary Workshop On Intangibles, Intellectual Capital And Extra-Financial Information, Athens University of Economics & Business (pp. 1-12).
- [9]. Lim, Y. M., Cham, T. H., Lee, T. H., Ramalingam, T., & Latha, C. (2019). Employer-employee perceptual differences in job competency: A study of generic skills, knowledge required, and personal qualities for accounting-related entry-level job positions. International Journal of Academic Research in Accounting, Finance and Management Sciences, 9(4), 73-83.
- Kyriakopoulos, G., Ntanos, S., Asonitou, S. (2020), Investigating the environmental behavior of business and [10]. accounting university students, International Journal of Sustainability in Higher Education, 21(4), 819-839. https://doi.org/10.1108/IJSHE-11-2019-0338
- Jordan, E. E., & Samuels, J. A. (2020). Research initiatives in accounting education: Improving learning [11]. effectiveness. Issues in Accounting Education, 35(4), 9-24. https://doi.org/10.2308/ ISSUES-2020-019
- [12]. Cheng, P., & Ding, R. (2021). The effect of online review exercises on student course engagement and learning performance: A case study of an introductory financial accounting course at an international joint venture university. Journal of Accounting Education, 54, 100699
- [13]. Chandra, R., & La, T. (2020). The effectiveness of blended learning in accounting education: a systematic review. Accounting Education, 29(4), 366-391 Kottara C, Kavalieraki-Foka D, Gonidakis F, Asonitou S, Zaridis A, Brinia V (2024) Sustainable Development
- [14]. and Blended Learning in Accounting Education. Int. J. of Education Economics and Development https://doi.org/10.1504/ijeed.2025.10062903
- Everaert, P., Opdecam, E., & Maussen, S. (2017). The relationship between motivation, learning approaches, [15]. academic performance and time spent. Accounting Education, 26(1), 78–107. https://doi.org/10.1080/09639284.2016.1274911
- [16]. Kottara C, Asonitou S, Mukokoma M, Gonidakis F, Kavalieraki-Foka D (2024) Enhancement of Social and Teamwork Skills Through Blended Learning Methodology in Accounting Studies. In: Kavoura, A., Borges-Tiago, T., Tiago, F. (eds) Strategic Innovative Marketing and Tourism. ICSIMAT 2023. Springer Proceedings in Business and Economics. Springer, Cham. https://doi.org/10.1007/978-3-031-51038-0_104
- [17]. Williams, S. R., & Brown, K. M. (2019). A mixed-methods investigation of the effectiveness of blended learning in accounting education. Journal of Education for Business, 94(1), 17-26
- Wu, Y. J., & Tsai, T. H. (2020). Effects of a Blended Learning Approach on Accounting Learning Performance [18]. and Motivation: Evidence from Taiwan. International Journal of Online Pedagogy and Course Design, 10(1), 33-49
- [19]. Coetzee, S. A. (2018). Blended learning in accounting education: A review of empirical studies. International Journal of Educational Technology in Higher Education, 15(1), 1 20
- Asonitou S., Kottara C., Duan S., Yuan L. (2020). A Comparative Approach of ELearning Accounting Programs in Greece and China. In: Kavoura A., Kefallonitis E., Theodoridis P. (eds) Strategic Innovative Marketing and Tourism. Springer Proceedings in [20]. Business and Economics. pp. 2015-214, Springer, Cham. https://doi.org/10.1007/978-3-030-36126-6_23
- Clarke, P. J. (1995). Some determinants of student performance in university accounting examinations. Accounting, Finance & [21]. Governance Review, 2(1).
- [22]. Al-Nawaiseh, F. K., Al-Jaghbir, M. T., Al-Assaf, M. S., Al-Nawaiseh, H. K., & Alzoubi, M. M. (2022). Breastfeeding initiation and duration and acute otitis media among children less than two years of age in Jordan: results from a case-control study. BMC pediatrics, 22(1), 370.
- [23]. Ntanos, S., Kyriakopoulos, G.L, Anagnostopoulos, T., Xanthopoulos, T., Kytagias, C., Drosos, D. (2022) Investigating the Environmental and the Energy Saving Behavior among School Principals through Classification Algorithms. International Journal of Renewable Energy Development, 11(2), 449-461
- [24]. Moore, S., Nguyen, H. A., & Stamper, J. (2021). Examining the effects of student participation and performance on the quality of learnersourcing multiple-choice questions. In Proceedings of the eighth ACM conference on learning@ scale (pp. 209-220).
- [25]. Geiger, M. A., Middleton, M. M., & Tahseen, M. (2021). Assessing the benefit of student self-generated multiplechoice questions on examination performance. Issues in Accounting Education, 36(2), 1-20.
- Nasu, V. H. (2024). Instructional delivery mode, response format, and student performance in accounting: [26]. evidence from Brazil. Accounting Education, 1-28
- [27]. Choo, N. (2020). The Effect of High School Accounting Study on Self-efficacy: An Empirical Study on Students Enrolled in an Introductory Tertiary Accounting Course (Doctoral dissertation, Auckland University of Technology).
- Miller, P., & Power, M. (2013). Accounting, organizing, and economizing: Connecting accounting research and [28]. organization theory. The academy of management annals, 7(1), 557-605.
- [29]. Andrade, M. S., Miller, R. M., McArthur, D., & Ogden, M. (2022). The impact of learning on student persistence in higher education. Journal of College Student Retention: Research, Theory & Practice, 24(2), 316-336.
- [30]. Aldamen, H., Al-Esmail, R., & Hollindale, J. (2015). Does lecture capturing impact student performance and attendance in an introductory accounting course?. Accounting Education, 24(4), 291-317.
- Kavanagh, M. H., & Drennan, L. (2008). What skills and attributes does an accounting graduate need? Evidence [31]. from student perceptions and employer expectations. Accounting & Finance, 48(2), 279-300
- [32]. Kottara, C., Asonitou, S., Tourna, E., Psaromiligkos, I. (2024). The Teaching, Cognitive, and Social Presence in a Blended Learning Environment for an Undergraduate Accounting Course. In International Conference for the Promotion of Educational Innovation 10th, Larisa, Greece, Conference, EEPEK 2024
- [33]. Wong, L., & Tatnall, A. (2009). The need to balance the blend: Online versus face-to-face teaching in an introductory accounting subject. Issues in Informing Science and Information Technology, 6, 309-322.
- [34]. Smith, J. G. (2012). Screen-capture instructional technology: A cognitive tool for blended learning. Saint Mary's College of California.
- [35]. Grabinski, K., Kedzior, M. and Krasodomska, J. (2015) 'Blended learning in tertiary accounting education in the CEE region - A Polish perspective', Accounting & Management Information Systems, 14(2), pp. 378–397. Krasodomska, J., & Godawska, J. (2021). E-learning in accounting education: the influence of students'
- [36]. characteristics on their engagement and performance. Accounting Education, 30(1), 22-41.
- Dowling §, C., Godfrey §, J. M., & Gyles, N. (2003). Do hybrid flexible delivery teaching methods improve [37]. accounting students' learning outcomes?. Accounting Education, 12(4), 373-391.

- [38]. McCarthy, M., Kusaila, M., & Grasso, L. (2019). Intermediate accounting and auditing: Does course delivery mode impact student performance?. Journal of Accounting Education, 46, 26-42.
- [39]. Lytras, M.D., Serban, A.C., Torres Ruiz, M.J., Ntanos, S., Sarirete, A. (2022) Translating knowledge into innovation capability: An exploratory study investigating the perceptions on distance learning in higher education during the COVID-19 pandemic - the case of Mexico, Journal of Innovation & Knowledge 7(4), 100258, https://doi.org/10.1016/j.jik.2022.100258
- [40]. Nortvig, A. M., Petersen, A. K. and Balle, S. H. (2018) 'A literature review of the factors influencing e-learning and blended learning in relation to learning outcome, student satisfaction and engagement', The Electronic Journal of eLearning, 16(1), pp. 46–55.
- [41]. Wong, L. (2012) 'Student attitudes towards e-learning', Issues in Informing Science and Information Technology, 9, pp. 195–207.
- [42]. O'Keefe, P., Rienks, J. H. and Smith, B. (2014) 'Use of resources, people and approaches by accounting students in a blending learning environment', Journal of University Teaching & Learning Practice, 11(3), pp. 1–16.
- [43]. Fortin, A., Viger, C., Deslandes, M., Callimaci, A. and Desforges, P. (2019) 'Accounting students' choice of blended learning format and its impact on performance and satisfaction', Accounting Education, 28(4), pp. 353– 383. doi: 10.1080/09639284.2019.1586553.
- [44]. Wuensch, K. L., Aziz, S., Ozan, E., Kishore, M., & Tabrizi, M. (2006). Pedagogical characteristics of online and face-to-face classes. In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (pp. 2422-2429).
- [45]. Paechter, M., & Maier, B. (2010). Online or face-to-face? Students' experiences and preferences in e-learning. The internet and higher education, 13(4), 292-297.
- [46]. Fearon, C., McLaughlin, H., & Yoke Eng, T. (2012). Using student group work in higher education to emulate professional communities of practice. Education+ training, 54(2/3), 114-125.
- [47]. Warren, D. L., & Young, M. N. (2012). Integrated accounting principles: A best practices course for introductory accounting. Issues in Accounting Education, 27(1), 247-266.
- [48]. Beatson, N. J., Berg, D. A., & Smith, J. K. (2020). The influence of self-efficacy beliefs and prior learning on performance. Accounting & Finance, 60(2), 1271-1294
- [49]. Abraham, A. and Jones, H. (2016) 'Facilitating student learning in accounting through scaffolded assessment', Issues in Accounting Education, 31(1), pp. 29–49. doi: 10.2308/iace-51320.
- [50]. Oordt, T. van and Mulder, I. (2016) 'Implementing basic e-learning tools into an undergraduate taxation curriculum', Meditari Accountancy Research, 24(3), pp. 341–367. doi: 10.1108/MEDAR-08-2015-0054.
- [51]. Chen, C. C., & Jones, K. T. (2007). Blended learning vs. traditional classroom settings: Assessing effectiveness and student perceptions in an MBA accounting course. Journal of educators online, 4(1), n1.
- [52]. Asonitou, S. (2020). Technologies to Communicate Accounting Information in the Digital Era: Is Accounting Education Following the Evolutions? In: Kavoura A., Kefallonitis E., Theodoridis P. (eds) Strategic Innovative Marketing and Tourism. Springer Proceedings in Business and Economics. pp. 187-194, Springer, Cham. https://doi.org/10.1007/978-3-030-36126-6_23
- [53]. Asonitou, S. (2022). Impediments and pressures to incorporate soft skills in Higher Education accounting studies. Accounting Education, 31(3), 243–272. https://doi.org/10.1080/09639284. 2021.1960871
- [54]. Halverson, L. R., Graham, C. R., Spring, K. J. and Drysdale, J. S. (2012) 'An analysis of high impact scholarship and publication trends in blended learning', Distance Education, 33(3), pp. 381–413. doi: 10.1080/01587919.2012.723166
- [55]. Graham, C. R., Woodfield, W. and Harrison, J. B. (2013) 'A framework for institutional adoption and implementation of blended learning in higher education', Internet and Higher Education, 18, pp. 4–14. doi: 10.1016/j.iheduc.2012.09.003.
- [56]. Singleton, A. (1999). Combining quantitative and qualitative research methods in the study of international migration. International Journal of Social Research Methodology, 2(2), 151-157.
- [57]. Apostolou, B., Dorminey, J. W. and Hassell, J. M. (2020) 'Accounting education literature review (2019)', Journal of Accounting Education, 51, pp. 1–24. doi: 10.1016/j.jaccedu.2020.100670.