European Journal of Education Studies
ISSN: 2501 - 1111
ISSN-L: 2501 - 1111
Available online at: www.oapub.org/edu

DOI: 10.46827/ejes.v12i8.6112 | Volume 12 | Issue 8 | 2025

EXPLORING THE CORRELATIONS BETWEEN INDIVIDUAL CHARACTERISTICS AND LEARNING OUTCOMES: AN EMPIRICAL STUDY IN FINANCIAL ACCOUNTING

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Abstract:
Introductory accounting courses are vital for students who aspire to become professional accountants or will work in other fields that make use of accounting information. Accounting is taught in several universities, while today there is a strong need to upgrade and redefine curricula, intending to connect with the labor market and the modern accounting profession. Accounting professors are trying to incorporate new teaching approaches, such as blended learning, into undergraduate and graduate courses in order to provide advanced accounting knowledge, which helps students develop useful skills both in the performance of their duties and in the business decision-making process. The primary purpose of this research is to examine the individual characteristics that govern students and how these may influence their learning outcomes in an undergraduate accounting course in Greece. A comparison was made between traditional teaching (control group) and the blended learning approach (experimental class). The research has a quasi-experimental and quantitative methodological design, conducting statistical tests and identifying significant correlations. Its contribution lies at four levels: i) identifying research gaps, ii) enhancing methodological design, iii) strengthening the theoretical

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framework, and iv) informing about practical implications. The findings provide important insights that assist the academic and scientific community in emerging new perspectives, with more student-centered pedagogical approaches that help upgrade higher accounting education.

Keywords: individual characteristics; learning outcomes; correlations; predisposition; digital literacy; attendance; self-efficacy; financial accounting

1. Introduction

Many universities hold the belief that introductory accounting courses have an increased level of difficulty, leading to a high rate of student failure and fostering a negative perception. Accounting courses are offered in many specialties at university institutions with the aim of providing students with a higher level of knowledge and skills that will benefit their professional careers (Beatson et.al, 2025). At the same time, there is a concerted effort to modernize accounting education by adopting hybrid teaching methods, such as blended learning, thus creating a framework for improving the learning experience in the field of accounting (Baragash & Al-Samarraie, 2018). However, accounting graduates are lacking skills, as teachers, despite rapid technological development, find it difficult to implement innovative educational practices, because course redesign may be time-consuming (Choo *et al.*, 2020).

The design of first-year accounting courses is a complex issue that is becoming increasingly challenging as students' needs evolve and shape the educational landscape. There are varying opinions and attitudes on this matter, with traditional teaching methods being the predominant approach in universities. However, these methods are often criticized for their shortcomings, which can be mitigated through the implementation of blended learning strategies (Adams *et al.*, 2020).

Learning effectiveness indicators are a means of focusing on the expectations of a program and facilitating both curriculum strategies and evaluation processes (York *et al.*, 2015). The main difference between student learning outcomes and performance indicators lies in the fact that course outcomes provide broad insights into student learning as a whole, without being quantifiable, whereas performance indicators are precise, measurable metrics known as achievement indicators. Derived from program outcomes, performance indicators typically manifest as the final grades awarded to students upon completion of a course. As such, performance is closely tied to learning outcomes, revealing the knowledge and skills that students have acquired (Jordan E. E., & Samuels J. A., 2020). In the context of accounting education, this connection is vital, as the rapid evolution of technology and the global marketplace demands accountants who are adaptable and capable of providing strategic advisory support to drive business growth and sustainability (Tempone *et al.*, 2012; Flood, 2014; Bupo, 2019).

To meet these evolving demands, accounting education must prioritize not only technical knowledge but also a broad set of generic skills critical for professional success. Recent research highlights the importance of skills such as analytical thinking, problem solving, oral and written communication, ethical awareness, teamwork, time management, leadership, and interpersonal skills (Vo *et al.*, 2017). These skills are not only essential for accountants, but are also reflected in the AICPA certification (2021) and, particularly, in the framework that outlines the skills needed for university graduates entering the accounting profession.

Among these skills, effective communication—both written and oral—stands out as a cornerstone of the accounting profession, as recognized by academics and professionals worldwide (Lin *et al.*, 2013; Vas *et al.*, 2018). Yet, students often enter accounting programs with the misconception that the field primarily involves numerical tasks, neglecting the importance of such skills (Simons & Riley, 2014). Researchers have noted that many graduates underestimate the significance of these skills, leaving them ill-prepared for the demands of the workforce (Chen, 2013; Kottara *et al.*, 2025a). While technical skills, such as proficiency in Microsoft Excel, remain highly valued, fostering effective soft skills is equally essential for professional success (Kotb *et al.*, 2019; Georgopoulou, 2024).

To address these gaps, innovative teaching methods like blended learning and flipped classrooms are gaining traction, as they foster creativity, expose students to diverse perspectives, and cultivate essential skills (Beatson *et al.*, 2024). Students who attended courses with the blended learning approach reported higher levels of satisfaction, improved self-confidence in using technology, and enhanced digital and soft skills, compared to those in traditional settings (Santos, 2022; Kottara, 2025b). Despite these advancements, accounting programs often fall short in equipping graduates with the full range of employer-demanded skills, as educational focus tends to prioritize technical knowledge over holistic skill development (Cheng & Ding, 2021).

Graduates often report that the undergraduate programs they attended did not adequately prepare them in acquiring the soft skills demanded by the accounting industry and employers, highlighting a pressing need for curricula to emphasize these competencies to enhance employability in a competitive job market (Jackling and De Lange, 2009; Webb and Chaffer, 2016; Dewi *et al.*, 2024).

Building on this need for comprehensive skill development, this study investigates the influence of individual characteristics and variables on student learning outcomes in an Advanced Financial Accounting course in Greece.

Specifically, it addresses two research questions:

Q1: How do individual characteristics affect the knowledge and skills of students in blended and traditional classrooms in an accounting course?

Q2: Are there differences in the effects of these characteristics between the two instructional formats (blended vs. traditional), and if so, which characteristics have the greatest impact in each setting?

Key variables examined include course competency, ICT literacy, participation, and self-efficacy, which are analyzed to determine their impact on student performance.

The study compares traditional face-to-face teaching with blended learning environments to identify which approach yields better outcomes. Employing a quasi-experimental design with quantitative and qualitative data, the research uses statistical tests (e.g., Mann-Whitney U, t-test, Pearson correlation) to uncover significant correlations, offering evidence-based insights to optimize instructional methods.

The study contributes to accounting education on four levels. First, it addresses a research gap by providing comparative evidence on how cognitive and personal traits affect student performance in blended versus traditional classrooms, an area previously underexplored. Second, it employs a robust quasi-experimental methodology, integrating statistical techniques to precisely identify variables significantly associated with performance. Third, the findings offer practical guidance for educators and curriculum developers, enabling tailored interventions to enhance learning, particularly for students with lower ICT literacy or self-efficacy, thereby improving retention and skill acquisition. Finally, it strengthens theoretical frameworks by applying theories such as Bandura's social cognitive theory of self-efficacy and self-directed learning in real-world educational settings, reinforcing the link between intrinsic motivation, cognitive processes, and instructional design. Ultimately, this research provides illuminating data to inform individualized pedagogical practices, fostering richer learning experiences and better preparing accounting students for the demands of the profession.

2. Background of the Study

This study examines how individual characteristics influence student learning outcomes in an Advanced Financial Accounting course, comparing traditional and blended learning environments. The following sections outline the dependent and independent variables central to this investigation, grounding them in relevant literature and their application within the study's context.

2.1 Dependent Variables

2.1.1 Knowledge

In accounting education research, knowledge is frequently employed as a dependent variable to assess student performance through quantitative measures (Duff *et al.*, 2020; Nsor-Ambala, 2022). In this study, knowledge is operationalized as learning outcomes, derived from the Advanced Financial Accounting course syllabus and primarily reflected in students' final grades. Scholars note that performance encapsulates both knowledge and skills, representing the cumulative acquisition of course-specific competencies (Everaert *et al.*, 2017; Durso & Cunha, 2018; Kottara *et al.*, 2025c). Accordingly, Knowledge (H1) and Skills (H2) are examined as a dependent variable, measured through a researcher-designed questionnaire completed by students in both traditional and blended learning classes.

2.1.2 Skills

Beyond technical knowledge, accounting graduates require a range of profession-specific and generic skills to meet employer expectations (Awayiga, 2014; Lim *et al.*, 2019). The Advanced Financial Accounting course, as outlined in the University of West Attica's Department of Business Administration study guide, emphasizes skills such as:

- Searching, analyzing, and synthesizing data and information using relevant technologies.
- Adapting to new situations.
- Promoting creative and inductive thinking.
- Working autonomously.
- Generating new research ideas.
- Collaborating effectively in teams.

These skills (H2) are treated as a dependent variable, assessed through the same questionnaire, which captures students' ability to demonstrate these competencies in both instructional formats.

2.2 Independent Variables

2.2.1 Predisposition for Accounting Courses

Students' attitudes toward accounting courses significantly influence their engagement and performance. This independent variable, predisposition, reflects students' perceptions of the course's relevance and difficulty (Kottara *et al.*, 2025d; Oluseyi-Sowunmi & Samuel, 2025). In the context of blended learning, changes in predisposition are particularly relevant, as this approach may alter students' attitudes compared to traditional methods. It is measured through targeted questions in the research questionnaire.

2.2.2 Previous Knowledge of ICT

Prior familiarity with Information and Communications Technologies (ICT) is a critical factor in technology-enhanced learning environments, influencing knowledge acquisition and skill development (Anthony *et al.*, 2022; Drosos *et al.*, 2025). Given the reliance of blended learning on digital tools, ICT knowledge is defined as an independent variable, assessed via the questionnaire to explore its impact on student outcomes.

2.2.3 Attendance (participation)

Class attendance, an indicator of academic responsibility and engagement, is closely linked to learning outcomes (Grabinski *et al.*, 2015; Krasodomska & Godawska, 2021; Georgopoulou *et al.*, 2024; Kottara, 2025e). In this study, attendance encompasses active participation in course activities, measured through questionnaire responses and attendance records, to evaluate its effect on performance in both learning environments.

2.2.4 Self-efficacy

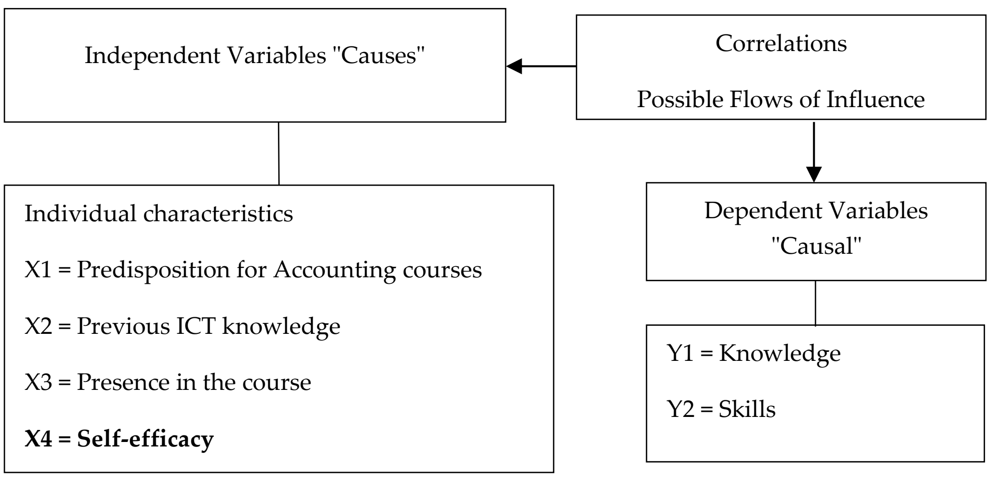
Self-efficacy, defined by Bandura (1997) as a learner's belief in their ability to complete tasks, is a key predictor of academic persistence and success (Anthonysamy *et al.*, 2020; Kottara *et al.*, 2025f; Kottara *et al.*, 2025g). In this research, self-efficacy is an independent variable, measured through the questionnaire, to assess its influence on students' knowledge and skills in traditional and blended settings.

3. Materials and Methods

This study adopts a quasi-experimental design to compare the impact of traditional and blended learning on student outcomes in the Advanced Financial Accounting course. Conducted during the spring semester of 2023 at the University of West Attica's Department of Business Administration, the study involved 60 students: 30 in the experimental (blended learning) group and 30 in the control (traditional learning) group, all participating voluntarily. Data were collected using a researcher-designed questionnaire tailored to measure the following variables (see Figure 1):

- **Dependent Variables:** Knowledge (Y1) and Skills (Y2).
- **Independent Variables:** Prior ICT Knowledge (X1), Predisposition for the Course (X2), Attendance/Participation (X3), and Self-Efficacy (X4).

Figure 1: Dependent and Independent Variables



The questionnaire captured quantitative and qualitative responses, enabling a comprehensive analysis of the variables' effects. Statistical tests, including Mann-Whitney U, t-tests, and Pearson correlations, were employed to identify significant relationships between the variables and learning outcomes, addressing the research questions. The findings aim to provide evidence-based insights to optimize instructional strategies in accounting education.

The Advanced Financial Accounting course was delivered to both the experimental (blended learning) and control (traditional learning) groups with identical academic objectives, content, and grading criteria to ensure consistency. The study adhered strictly to the academic regulations of the University of West Attica, maintaining the validity and reliability of the research process. Ethical considerations were prioritized throughout, with measures such as participant anonymity implemented to safeguard impartiality and prevent any influence on students' performance or behavior. Prior to the experiment's commencement in the spring semester of 2023, the research questionnaire was reviewed and approved by the Research Ethics Committee of the University of West Attica, ensuring compliance with institutional ethical standards.

4. Findings

Statistical Controls and Aggregated Control Table

The study examined the influence of individual characteristics on Knowledge (Y1) and Skills (Y2) in traditional and blended learning environments. Statistical controls assessed the impact of demographics and independent variables (Prior ICT Knowledge, Predisposition, Attendance/Participation, Self-Efficacy) on these outcomes.

In the traditional classroom, demographic factors did not significantly affect Knowledge or Skills indicators. In the blended classroom, however, Prior ICT Knowledge significantly influenced both Knowledge and Skills, with students demonstrating high ICT proficiency achieving higher learning outcomes. Additionally, in the blended class, positive Predisposition for the course was associated with higher Knowledge scores, while consistent Presence (i.e. Attendance/Participation) correlated with elevated Skills scores. These findings highlight the differential impact of individual characteristics across instructional formats.

Table 1: Testing the Relationships between Knowledge and Skills with Individual Student Characteristics

	Total sample		Traditional		Blended	
	Knowledge	**Skills**	**Knowledge**	**Skills**	**Knowledge**	**Skills**
Predisposition	No Difference**	No Difference**	No Difference**	No Difference*	No Difference**	No Difference*
Prior Knowledge of ICT	Difference**	Difference**	No Difference**	No Difference*	Difference**	Difference*
Presence	No Difference**	Difference**	No Difference*	No Difference*	No Difference**	Difference**
Self-Efficacy	High Correlation***	High Correlation***	High Correlation	High Correlation	High Correlation***	High Correlation***
* Independent Samples t Test						
** Mann-Whitney U						
*** Pearson Correlation						

Predisposition

The Predisposition variable was derived from responses to the questionnaire item, "Are accounting courses useful?" Of the 58 respondents (total sample after accounting for missing data), 43 (74.1%) answered, "They are very useful for their professional career" (YES category), while 15 (25.9%) selected options indicating lower perceived utility, such as "They are not that necessary for their professional career," "I only take them because they are mandatory," or "I consider them easy courses and expect a good grade" (NO category).

Table 2: Survey Questionnaire Question

X2 Are Accounting courses useful?			
		Frequency	**Valid Percent**
Valid	YES	43	74,1
	NO	15	25,9
	Total	58	100,0

Sample set, Normality check

Normality tests were conducted to determine appropriate statistical methods. For the entire sample, the data within the categories of the Predisposition variable, for the Knowledge index, do not follow a normal distribution, while the data for the Skills index follow a normal distribution. For the Knowledge index, Mann-Whitney U and for the Skills index, Independent Samples t Test were conducted to test Predisposition and to what extent it affects these indicators.

Table 3: Normality Test

Tests of Normality				
	X2 Are Accounting courses useful?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,901	43	,001
	NO	,707	15	,000
Y2 Skills Index	YES	,950	43	,062
	NO	,888	15	,063
*. This is a lower bound of the true significance.				
a. Lilliefors Significance Correction				

Hypotheses Testing

For the Knowledge index, the p-value of the test was calculated to be 0.103, i.e., greater than the significance level α=5%, therefore, there is no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 4: Knowledge Index Hypothesis Testing

Test Statistics[a]	
	Y1 Knowledge Index
Mann-Whitney U	232,000
Wilcoxon W	1178,000
Z	-1,632
Asymp. Sig. (2-tailed)	,103
a. Grouping Variable: X2 Are Accounting courses useful?	

For the Skills index, the p-value of the test was calculated to be 0.788, i.e., greater than the significance level α=5%. It was found that there is no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 5: Skills Index Assumptions Testing

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y2 Skills Index	-,270	56	,788	-,2263	,8384	-1,9058	1,4532

Traditional Class (control group) and Blended (experimental class)
Normality Test

For the traditional classroom, the data within the NO category of the Predisposition variable for the Knowledge index does not follow the normal distribution, and the data for the Skills index follows the normal distribution. For the Knowledge indicator, the Mann-Whitney U was performed, and for the Skills indicator, the Independent Samples t Test was performed to test whether Predisposition affects these indicators in the traditional classroom.

Table 6: Testing Predisposition Hypotheses

Tests of Normality[a]				
	X2 Are Accounting courses useful?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,951	18	,441
	NO	,811	10	,020
Y2 Skills Index	YES	,988	18	,995
	NO	,920	10	,353
*. This is a lower bound of the true significance.				
a. Class = Traditional				
b. Lilliefors Significance Correction				

For the blended class, the data for the Knowledge indicator does not follow the normal distribution, and the data for the Skills indicator follows the normal distribution. For the Knowledge indicator, the Mann-Whitney U test was performed, and for the Skills indicator, the Independent Samples t Test was performed to test whether Predisposition affects these indicators in the blended class.

Table 7: Testing Normality Assumptions

Tests of Normality[a]				
	X2 Are Accounting courses useful?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,829	25	,001
	NO	.	5	.
Y2 Skills Index	YES	,930	25	,087
	NO	,964	5	,833
*. This is a lower bound of the true significance.				
a. Class = Blended				
b. Lilliefors Significance Correction				

Hypotheses Test

In the traditional classroom for the Knowledge index, the p-value of the test was calculated to be 0.121, i.e., greater than the significance level α=5%. Therefore, there is no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 8: Test the Level of Utility of Accounting Courses

Test Statistics[a,b]	
	Y1 Knowledge Index
Mann-Whitney U	57,500
Wilcoxon W	228,500
Z	-1,561
Asymp. Sig. (2-tailed)	,119
Exact Sig. [2*(1-tailed Sig.)]	,121[c]
a. Class = Traditional	
b. Grouping Variable: X2 Are Accounting courses useful?	
c. Not corrected for ties.	

In the traditional classroom, the p-value of the test for the Skills index was calculated to be 0.260, i.e., greater than the significance level α=5%, resulting in no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 9: Independent Samples Test

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y2 Skills Index	-1,152	26	,260	-1,3306	1,1553	-3,7054	1,0442

In the blended class for the knowledge index, the p-value of the test was calculated to be 0.022, i.e., less than the significance level α=5%. It was found that there is no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 10: Knowledge Index Test Statistics

Test Statistics[a,b]	
	Y1 Knowledge Index
Mann-Whitney U	22,500
Wilcoxon W	347,500
Z	-2,349
Asymp. Sig. (2-tailed)	,019
Exact Sig. [2*(1-tailed Sig.)]	,022[c]
a. Class = Blended	
b. Grouping Variable: X2 Are Accounting courses useful?	
c. Not corrected for ties.	

From the descriptive statistics for the Knowledge index between the two groups of students, it is observed that students with high ICT knowledge show a higher average value on the index, approximately two units compared to the others (7.185 and 5.117, respectively). There is a positive correlation between Predisposition and the Knowledge index.

Table 11: Group Predisposition Statistics

Group Statistics[a]					
	X2 Are Accounting courses useful?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y1 Knowledge Index	YES	18	5,117	2,9780	,7019
	NO	10	7,185	3,0961	,9791
a. Class = Traditional					

In the blended class for the Skills index, the p-value of the test was calculated to be 0.561, i.e., greater than the significance level α=5%. Therefore, there is no statistically significant difference between students who believe that accounting courses are useful and those who state that they are not useful.

Table 12: Independent Samples Test of Skill Index

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y2 Skills Index	-,611	7,056	,561	-,4365	,7148	-2,1241	1,2512

Prior Knowledge of ICT

The Prior Knowledge of ICT variable was derived from responses to the questionnaire item, "What is your level of ICT knowledge?" Of the 58 respondents (after accounting for missing data), 25 (43.1%) reported "Very good" or "Good" (YES category), while 33 (56.9%) indicated "Average" or "Very poor" (NO category).

Table 13: Level of Prior ICT Knowledge

X2 Do they have above average Previous ICT knowledge level?			
		Frequency	**Valid Percent**
Valid	NO	25	43,1
	YES	33	56,9
	Total	58	100,0

Sample set, Normality test

Across the entire sample, the data within the YES category of the variable Prior ICT knowledge, for the Knowledge index and the Skills index do not follow the normal distribution and for both indices, the Mann-Whitney U test was conducted, regarding Prior ICT knowledge and how it affects learning outcomes (Knowledge + Skills).

Table 14: Prior ICT Knowledge Normality Test

Tests of Normality				
	X5 Do they have above average Previous ICT knowledge level?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	NO	,942	25	,164
	YES	,751	33	,000
Y2 Skills Index	NO	,963	25	,478
	YES	,848	33	,000
*. This is a lower bound of the true significance.				
a. Lilliefors Significance Correction				

Hypotheses test

For the Knowledge index, the p-value of the test was calculated to be 0.008, i.e., less than the significance level α=5%, so there is a statistically significant difference between students who have above average prior ICT knowledge and those who do not.

Table 15: Assumptions Testing on Prior ICT Knowledge

Test Statistics[a]	
	Y1 Knowledge Index
Mann-Whitney U	246,500
Wilcoxon W	571,500
Z	-2,647
Asymp. Sig. (2-tailed)	,008
a. Grouping Variable: X2 Do they have above average Previous ICT knowledge level?	

From the descriptive statistics for the Knowledge index between the two groups of students, it was revealed that students with high Prior ICT knowledge show a higher average value on the index, approximately two units, compared to the rest (7,984 and 5,793, respectively).

Table 16: Level of Prior ICT Knowledge above average

Group Statistics					
	X2 Do they have above average Previous ICT knowledge level?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y1 Knowledge Index	NO	25	5,793	2,9036	,5807
	YES	33	7,984	2,8058	,4884

For the Skills index, the p-value of the test was calculated to be 0.027, i.e., less than the significance level α=5%. There is a statistically significant difference between students who have above average knowledge in Prior ICT knowledge and those who do not.

Table 17: Test Statistics for Prior ICT Knowledge Level

Test Statistics[a]	
	Y2 Skills Index
Mann-Whitney U	272,000
Wilcoxon W	597,000
Z	-2,210
Asymp. Sig. (2-tailed)	,027
a. Grouping Variable: X2 Do they have above average Previous ICT knowledge level?	

From the descriptive statistics for the Skills index between the two groups of students, it was identified that students with high Prior ICT knowledge show a higher average value on the index, of approximately one unit, compared to the others (6,998 and 5,829, respectively). A positive correlation was also observed between Prior ICT Knowledge and Skills.

Table 18: Correlation of Level of Prior ICT Knowledge Above Average

Group Statistics						
	X2 Do they have above average Previous ICT knowledge level?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y2 Skills Index	NO	25	5,829	2,3374	,4675
	YES	33	6,998	2,9985	,5220

Traditional Class (control group) and Blended (experimental class)
Normality Test

For the traditional classroom, the data within the categories of the variable Prior ICT knowledge, for both indicators, follow a normal distribution. Therefore, the Independent Samples t Test was conducted in both cases to test whether Prior ICT knowledge affects these indicators in the traditional classroom.

Table 19: Normality Check for prior ICT Knowledge above average

Tests of Normality[a]				
	X2 Do they have above average Previous ICT knowledge level?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	NO	,955	14	,646
	YES	,887	14	,073
Y2 Skills Index	NO	,972	14	,907
	YES	,908	14	,150
*. This is a lower bound of the true significance.				
a. Class = Traditional				
b. Lilliefors Significance Correction				

For the blended class, the data within the YES category of the ICT Knowledge variable, for the Knowledge index, do not follow the normal distribution, while for the Skills index, they follow the normal distribution within the categories of the Previous ICT Knowledge variable.

For the Knowledge indicator, the Mann-Whitney U was performed, while for the Skills indicator, the Independent Samples t Test was performed to test whether Prior ICT knowledge affects these indicators in the blended class.

Table 20: Normality Test of Skills Index for Prior ICT Knowledge Above Average

Tests of Normality[a]				
	X2 Do they have above average Previous ICT knowledge level?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	NO	,924	11	,357
	YES	,679	19	,000
Y2 Skills Index	NO	,921	11	,323
	YES	,920	19	,112
*. This is a lower bound of the true significance.				
a. Class=Blended				
b. Lilliefors Significance Correction				

Hypotheses Test

In the traditional classroom for the Knowledge indicator, the p-value of the test was calculated to be 0.406, i.e., greater than the significance level α=5%, there is no statistically significant difference between students who have above average knowledge in Prior ICT knowledge and those who do not.

Table 21: Independent Samples Test

Independent Samples Test							
	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Y1 Knowledge Index	-,844	26	,406	-1,0041	1,1894	-3,4490	1,4407

In the traditional classroom, the p-value of the test for the Skills index was calculated to be 0.867, i.e., greater than the significance level α=5%. There was no statistically significant difference between students who have above average knowledge in Prior ICT knowledge and those who do not.

Table 22: T-test for Equality of Means

Independent Samples Test							
	t-test for Equality of Means						
	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Y2 Skills Index	,169	26	,867	,1915	1,1344	-2,1404	2,5233

In the blended class for the Knowledge indicator, the p-value of the test was calculated to be 0.014, i.e., less than the significance level α=5%. There is a statistically significant difference between students who have above average knowledge in Prior ICT knowledge and those who do not.

Table 23: P-value of the ICT Prior Knowledge Test

Test Statistics[a,b]	
	Y1 Knowledge Index
Mann-Whitney U	48,000
Wilcoxon W	114,000
Z	-2,565
Asymp. Sig. (2-tailed)	,010
Exact Sig. [2*(1-tailed Sig.)]	,014[c]
a. Class=Blended	
b. Grouping Variable: X5 If they have above average prior ICT knowledge	
c. Not corrected for ties.	

From the descriptive statistics for the Knowledge index between the two classes, it was found that students with high ICT knowledge show a higher average value on the index, approximately one unit compared to the others (6,357 and 5,353, respectively). Prior ICT knowledge has a positive correlation with the Knowledge index.

Table 24: Correlation of the Knowledge Index with Prior ICT Knowledge

Group Statistics[a]						
	X5 Do they have above average Previous ICT knowledge level?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y1 Knowledge Index	NO	14	5,353	2,8005	,7485
	YES	14	6,357	3,4587	,9244
a. Class = Traditional					

In the blended class for the Skills index, the p-value of the test was calculated to be 0.004, i.e., less than the significance level α=5%.

There is a statistically significant difference between students who have above average knowledge in Prior ICT knowledge and those who do not.

Table 25: Correlation of the Knowledge Index with Prior ICT Knowledge

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y2 Skills Index	-3,126	28	,004	-1,7911	,5729	-2,9646	-,6176

From the descriptive statistics for the Skills index between the two classes, it was revealed that students with high Prior ICT Knowledge have a higher average value on the index, approximately two points compared to the rest (8,526 and 6,735, respectively). Prior ICT Knowledge has a positive correlation with the Skills index.

Table 26: Correlation of the Skills Index with Prior ICT Knowledge

Group Statistics[a]					
	X2 Do they have above average Previous ICT knowledge level?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y2 Skills Index	NO	11	6,735	1,9438	,5861
	YES	19	8,526	1,2073	,2770
a. Class = Blended					

Presence

The Presence (Attendance) variable was derived from responses to the questionnaire item, "So far, I have not been absent from class even once." Of the 58 respondents (after accounting for missing data), 24 (41.4%) reported, "I have not been absent from class even once" (YES category), while 34 (58.6%) indicated, "I have been absent from class at least once" (NO category).

Table 27: Course Attendance

X4 Have They Attended All the Courses?			
		Frequency	**Valid Percent**
Valid	YES	24	41,4
	NO	34	58,6
	Total	58	100,0

Total Sample, Normality Test

In the entire sample, the data within the categories of the Presence variable, for the Knowledge indicator, do not follow the normal distribution, and for the Skills indicator within the YES category of the Presence variable, do not follow the normal distribution. For both indicators, a Mann-Whitney U test was conducted in order to determine whether Presence affects these indicators.

Table 28: Regularity of Attendance in Classes

Tests of Normality				
	X3 Have they attended all the courses?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,733	24	,000
	NO	,925	34	,023
Y2 Skills Index	YES	,864	24	,004
	NO	,961	34	,257
*. This is a lower bound of the true significance.				
a. Lilliefors Significance Correction				

Hypothesis testing

For the Knowledge index, the p-value of the test was calculated to be 0.071, i.e., greater than the significance level α=5%, so there is no statistically significant difference between students who have attended all courses and those who have not.

Table 29: Course Attendance Assumptions Tests

Test Statistics[a]	
	Y1 Knowledge Index
Mann-Whitney U	295,500
Wilcoxon W	890,500
Z	-1,803
Asymp. Sig. (2-tailed)	,071
a. Grouping Variable: X4 Have they attended all the courses?	

For the Skills index, the p-value of the test was calculated to be 0.027, which is less than the significance level α=5%. There is a statistically significant difference between students who have attended all courses and those who have not.

Table 30: Test Statistics of Attendance in Classes

Test Statistics[a]	
	Y2 Skills Index
Mann-Whitney U	268,500
Wilcoxon W	863,500
Z	-2,207
Asymp. Sig. (2-tailed)	,027
a. Grouping Variable: X4 Have they attended all the courses?	

Regarding the Skills index of the two classes, it was found that students who have attended all the courses have a higher average value in the index, approximately two units compared to the rest (67,317 and 5,913, respectively).

Table 31: Group Statistics of Attendance in Classes

Group Statistics					
	X3 Have they attended all the courses?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y2 Skills Index	YES	24	7,317	2,7339	,5581
	NO	34	5,913	2,6892	,4612

Traditional Class (control group) and Blended (experimental class)

Normality Test

For the traditional class, the data within the categories of the variable Presence, for both indicators, follow a normal distribution. In both cases, the Independent Samples t Test was performed to check whether Presence affects these indicators in the traditional class.

Table 32: Independent Samples t Test of Class Attendance

Tests of Normality[a]				
	X3 Have they attended all the courses?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,911	10	,291
	NO	,939	18	,277
Y2 Skills Index	YES	,926	10	,406
	NO	,968	18	,754
*. This is a lower bound of the true significance.				
a. Class = Traditional				
b. Lilliefors Significance Correction				

For the blended class, the data within the YES category of the Presence variable, for both indicators, do not follow the normal distribution, while a Mann-Whitney U was performed to test whether Presence affects these indicators in the blended class.

Table 33: Mann-Whitney U Test of Class Attendance

Tests of Normality[a]				
	X3 Have they attended all the courses?	**Shapiro-Wilk**		
		Statistic	**df**	**Sig.**
Y1 Knowledge Index	YES	,503	14	,000
	NO	,902	16	,085
Y2 Skills Index	YES	,854	14	,025
	NO	,977	16	,936
*. This is a lower bound of the true significance.				
a. Class=Blended				
b. Lilliefors Significance Correction				

Hypothesis Testing

In the traditional classroom for the Knowledge index, the p-value of the test was calculated to be 0.598, i.e., greater than the significance level α=5%. It was found that there is no statistically significant difference between students who have attended all courses and those who have not.

Table 34: Independent Samples Test of Presence in relation to Knowledge

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y1 Knowledge Index	-,533	26	,598	-,6672	1,2512	-3,2391	1,9047

In the traditional classroom for the Skills index, the p-value of the test was calculated to be 0.527, i.e., greater than the significance level α=5%, so there is no statistically significant difference between students who have attended all courses and those who have not.

Table 35: Independent Samples Test of Presence in relation to Skills

Independent Samples Test							
	t-test for Equality of Means						
	t	**df**	**Sig. (2-tailed)**	**Mean Difference**	**Std. Error Difference**	**95% Confidence Interval of the Difference**	
						Lower	**Upper**
Y2 Skills Index	,641	26	,527	,7532	1,1752	-1,6624	3,1689

In the blended class for the Knowledge index, the p-value of the test was calculated to be 0.524, i.e., greater than the significance level α=5%. There is no statistically significant difference between students who have attended all courses and those who have not.

Table 36: Test Statistics of Attendance in all Courses

Test Statistics[a,b]	
	Y2 Skills Index
Mann-Whitney U	76,500
Wilcoxon W	247,500
Z	-,647
Asymp. Sig. (2-tailed)	,517
Exact Sig. [2*(1-tailed Sig.)]	,524[c]
a. Class = Traditional	
b. Grouping Variable: X3 Have they attended all the courses?	
c. Not corrected for ties.	

In the blended class for the Skills index, the p-value of the test was calculated to be 0.022, which is less than the significance level α=5%. A statistically significant difference was found between students who have attended all courses and those who have not.

Table 37: Statistical Difference in Presence

Test Statistics[a,b]	
	Y2 Skills Index
Mann-Whitney U	57,500
Wilcoxon W	193,500
Z	-2,281
Asymp. Sig. (2-tailed)	,023
Exact Sig. [2*(1-tailed Sig.)]	,022[c]
a. Class = Blended	
b. Grouping Variable: X3 Have they attended all the courses?	
c. Not corrected for ties.	

From the descriptive statistics for the Skills index between the two classes, it was found that students with Presence in all courses show a higher average value in the index, approximately one and a half units, compared to the rest (8,612 and 7,219, respectively). Presence has a positive correlation with the Skills index.

Table 38: Descriptive Statistics of the Skills indicator for Presence

Group Statistics[a]					
	X3 Have they attended all the courses?	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Y2 Skills Index	YES	14	8,612	1,4535	,3885
	NO	16	7,219	1,7210	,4303
a. Class = Blended					

Self-efficacy

The Self-Efficacy variable, measured as a continuous scale via the questionnaire, was analyzed for its relationship with the Knowledge (Y1) and Skills (Y2) indices using Pearson Correlation, given the continuous nature of all three variables.

Sample Total

Analysis of the entire sample (n = 58, after accounting for missing data) revealed a positive relationship between Self-Efficacy and both outcome indices. Scatter plots illustrated that higher Self-Efficacy scores corresponded to higher Knowledge and Skills scores.

Table 39: Pearson Correlation of Self-Efficacy Index, Knowledge

Correlations			
		Y1 Knowledge Index	**X4 Self-Efficacy Index**
Y1 Knowledge Index	Pearson Correlation	1	,706
	Sig. (2-tailed)		,000
	N	58	58

Table 40: Pearson Correlation of Self-Efficacy Index, Skills

Correlations			
		Y2 Skills Index	**X4 Self-Efficacy Index**
Y2 Skills Index	Pearson Correlation	1	,743
	Sig. (2-tailed)		,000
	N	58	58

Traditional Class (control group) and Blended (experimental class)

For the traditional class, the Self-Efficacy Index and correlation with Skills was calculated to be equal to 0.667, and between the Self-Efficacy and Skills indices equal to 0.650. Therefore, within the traditional class, there is a strong positive correlation between the two indices.

Table 41: Comparison of Self-Efficacy and Skills in the Traditional Classroom

Correlations[a]			
		Y1 Knowledge Index	**X4 Self-Efficacy Index**
Y1 Knowledge Index	Pearson Correlation	1	,667
	Sig. (2-tailed)		,000
	N	28	28
a. Class=Traditional			

Table 42: Comparison of Self-Efficacy and Skills in the Blended Classroom

Correlations[a]			
		Y1 Knowledge Index	**X4 Self-Efficacy Index**
Y1 Knowledge Index	Pearson Correlation	1	,650
	Sig. (2-tailed)		,000
	N	30	30
a. Class = Blended			

For the blended class, the Pearson Correlation between the Self-Efficacy and Knowledge indicators was calculated to be equal to 0.681, and between the Self-Efficacy and Skills indicators to be equal to 0.721. As a result, there is a strong positive correlation between the two indicators within the blended class.

Table 43: Self-efficacy and Correlation with Skills in the Traditional Classroom

Correlations[a]			
		Y2 Skills Index	**X4 Self-Efficacy Index**
Y2 Skills Index	Pearson Correlation	1	,681
	Sig. (2-tailed)		,000
	N	28	28
a. Class = Traditional			

Table 44: Self-efficacy and Correlation with the Skills index in the blended classroom

Correlations[a]			
		Y2 Skills Index	**X4 Self-Efficacy Index**
Y2 Skills Index	Pearson Correlation	1	,721
	Sig. (2-tailed)		,000
	N	30	30
a. Class = Blended			

5. Summarizing Findings by Variable

5.1 Course predisposition

Total sample:
- Knowledge:
➤ No statistically significant difference (p = 0.103 > 0.05, Mann-Whitney U)
- Skills:
➤ No statistically significant difference (p = 0.788 > 0.05, t-test)
Blended class:
- Knowledge:
➤ There is a statistically significant difference (p = 0.022 < 0.05, Mann-Whitney U)
Students with positive dispositions have higher knowledge
- Skills:
➤ There is no difference (p = 0.561 > 0.05, t-test)
Traditional class:
- No statistically significant difference in either variable (Knowledge or Skills).

5.1.1 Conclusion

Predisposition is only related to Knowledge and only in the Blended Class, according to Mann-Whitney U.

5.2 ICT Competency

Total sample:

- Knowledge:

➤ Statistically significant difference ($p = 0.008 < 0.05$, Mann-Whitney U)

➤ Students with high computer knowledge have higher knowledge (MO = 7.984 vs. 5.793)

- Skills:

➤ Statistically significant difference ($p = 0.027 < 0.05$, Mann-Whitney U)

Blended class:

- Knowledge:

➤ Statistically significant difference ($p = 0.014 < 0.05$, Mann-Whitney U)

- Skills:

➤ Statistically significant difference ($p = 0.004 < 0.05$, t-test)

Traditional class:

- Knowledge:

➤ No difference ($p = 0.406 > 0.05$, t-test)

- Skills:

➤ No difference ($p = 0.867 > 0.05$, t-test)

5.2.1 Conclusion

Computer Knowledge has a positive correlation with Knowledge and Skills, especially in the Blended Class and in the total sample. The statistical indicators that prove it are Mann-Whitney U and Independent Samples t-test.

5.3 Class Attendance

Total sample:

- Knowledge:

➤ No difference ($p = 0.071 > 0.05$, Mann-Whitney U)

- Skills:

➤ Statistically significant difference ($p = 0.027 < 0.05$, Mann-Whitney U)

Blended class:

- Knowledge:

➤ No difference ($p = 0.524 > 0.05$)

- Skills:

➤ Statistically significant difference ($p = 0.022 < 0.05$, Mann-Whitney U)

Students who attended all courses have higher skills

Traditional class:

- No statistically significant difference ($p > 0.5$ for Knowledge and Skills)

5.3.1 Conclusion
Attendance is only positively related to Skills, and mostly in the Blended Class and in the total sample, with statistically significant results via Mann-Whitney U.

5.4 Self-efficacy
Total sample:
- Knowledge:
➤ Pearson correlation = 0.706, p = 0.000
- Skills:
➤ Pearson correlation = 0.743, p = 0.000
Traditional Class:
- Knowledge:
➤ Pearson correlation = 0.667, p = 0.000
- Skills:
➤ Pearson correlation = 0.681, p = 0.000
Blended Class:
- Knowledge:
➤ Pearson correlation = 0.650, p = 0.000
- Skills:
➤ Pearson correlation = 0.721, p = 0.000

5.4.1 Conclusion
Self-efficacy shows a strong positive correlation with Knowledge and Skills in all cases (Total, Traditional, Blended) through Pearson Correlation.

Table 45: Correlation Table

Variables	Indicators	Traditional class	Blended class	Total sample	Statistical Control	Conclusion
Course predisposition	Knowledge	(p=0.121)	(p=0.022)	(p=0.103)	Mann-Whitney U	Positive impact on the Blended Class
	Skills	(p=0.260)	(p=0.561)	(p=0.788)	t-test	No significant difference
ICT competency	Knowledge	(p=0.406)	(p=0.014)	(p=0.008)	t-test / Mann-Whitney	Positive impact on Blended Class & Total
	Skills	(p=0.867)	(p=0.004)	(p=0.027)	t-test / Mann-Whitney	Positive impact on Blended Class & Total
Class attendance	Knowledge	(p=0.598)	(p=0.524)	(p=0.071)	t-test / Mann-Whitney	No significant difference
	Skills	(p=0.527)	(p=0.022)	(p=0.027)	t-test / Mann-Whitney	Positive impact on Blended Class & Total
Self-efficacy	Knowledge	(r=0.667**)	(r=0.650**)	(r=0.706**)	Pearson Correlation	Strong positive correlation
	Skills	(r=0.681**)	(r=0.721**)	(r=0.743**)	Pearson Correlation	Strong positive correlation
Positive correlation/impact (r > 0.6/p < 0.05)						
No significant difference (r <0.6/p ≥ 0.05)						

6. Discussion

This paper provides an analysis of the perceptions of undergraduate and master‘s level university students – future teachers regarding the use of generative artificial intelligence technologies, a cutting-edge technology that is increasingly invading everyday life and education. The aim was to study (a) the understanding, willingness to use, benefits and challenges perceived by students regarding the use of generative artificial intelligence in teaching and learning, along with its applications in higher education, and (b) the effect of a targeted, hands-on intervention on the students‘ perceptions.

Our findings revealed a complex landscape of perceptions that includes both students' enthusiasm and concerns. According to the results, most students had no or insufficient experience in using ChatGPT. However, they stated that they are generally familiar with generative AI technologies, even though they do not use them widely. Their sense of familiarity can also be explained by the vivid conversation happening in social or mass media over the last couple of years. This result is also consistent with the findings of Chan (2025), who demonstrated the low experience of using generative artificial intelligence, but also of Singh *et al.* (2023), where students' familiarity with the tool was highlighted. Still, they did not use it regularly for academic purposes. In addition, the findings revealed that STEM students use generative AI more often, while non- STEM students prefer to use it less often. This can be attributed to the fact that STEM students have more expertise in such technological systems and have a different professional orientation, which makes it imperative to utilise these tools. It is also worth noting that students aged 23 to 42 make the most frequent use of ChatGPT. Moreover, the inadequacy in the use experiences of generative artificial intelligence indicates the existence of room for growth in adoption and integration.

This study explored the influence of individual student characteristics on learning outcomes—Knowledge (Y1) and Skills (Y2)—in an Advanced Financial Accounting course, comparing traditional and blended learning environments. The following discussion addresses the two research questions, based on the data collected and analyzed in the previous sections.

6.1 Impact of Individual Characteristics (Research Question 1)

Regarding the first research question, the study identified four key individual characteristics —Predisposition, Presence (Attendance), Prior ICT Knowledge, and Self-Efficacy— as significant predictors of learning outcomes, particularly in the blended classroom. Unlike prior research that often examined these factors independently (e.g., Cheng & Ding, 2021; Anthonysamy *et al.*, 2020), this study analyzed their interactive effects, providing a more comprehensive understanding of their role in accounting education.

Course predisposition, reflecting students' initial attitudes toward the significance and applicability of accounting courses, significantly influenced Knowledge outcomes in the blended classroom. Students with positive attitudes achieved higher Knowledge scores compared to those with less favorable views. These attitudes, viewing accounting as essential or peripheral to academic and professional growth, directly affected engagement and comprehension. These findings align with research on the role of motivation and academic preparedness in shaping learning outcomes (Cheng & Ding, 2021; Anthony *et al.*, 2022; Dewi *et al.*, 2024).

Class attendance was a predictor of skills formation, particularly in the blended environment. Students with all-class attendance developed more acute practical skills compared to their counterparts with low attendance. As such, regular attendance can be utilized as a measure of academic responsibility and influences learning productivity (Grabinski *et al.*, 2015; Krasodomska & Godawska, 2021).

ICT competency also influenced significantly both knowledge and skills, especially in the blended classroom. Students with high computer proficiency outperformed their peers, underscoring digital literacy's role in technology-enhanced learning. These results support Oluseyi-Sowunmi & Samuel (2025), who argue that digital literacy has a positive effect on students' engagement with technology-enhanced learning environments. Institutions should, thus, consider integrating foundational ICT courses in all departments to prepare students sufficiently for technology-rich learning environments (Georgopoulou *et al.*, 2024).

Finally, self-efficacy was a robust predictor of student achievement in both instructional modes. Students who believed in their ability to achieve their academic success achieved greater gains in knowledge and skills. Strong positive correlations were observed with knowledge and skills across the sample, with slightly stronger effects in the blended classroom. These results align with previous research on self-efficacy as a predictor of student persistence and attainment in online and blended environments (Anthonysamy *et al.*, 2020; Kottara *et al.*, 2025c).

Notably, none of the personal characteristics significantly affected student performance in the traditional classroom, likely due to the passive, teacher-centered approach. This contrast suggests the blended model's ability to amplify the influence of individual characteristics on learning outcomes.

6.2 Differences Between Instructional Formats (Research Question 2)

Regarding the second research question, the results revealed distinction between traditional and blended learning formats. The blended classroom significantly outperformed the traditional one in knowledge as well as skills. The mean scores of the blended class were 8.1 and 7.9, respectively, compared to 5.9 and 5.0 of their traditional classroom counterparts. More importantly, the blended environment amplified the impact of individual characteristics. While the traditional format showed limited effects on personal factors and performance, the blended format strengthened the impact of student attitude, ICT literacy, class attendance, and self-efficacy.

Blended classroom students, despite starting with low expectations, achieved significantly higher Knowledge scores. They attributed their success not only to their involvement, but also to the design of the course, which included interactive features such as video lectures, quizzes, polls, mind maps, group projects, and immediate feedback mechanisms. These findings are consistent with earlier studies on the potential of blended and flipped classroom models to enhance student engagement and learning (Vo *et al.*, 2017; Kottara, 2025a). This mix of synchronous (e.g., group discussion via MS Teams) and asynchronous (e.g., collaborative mind mapping via Moodle) tools promoted deeper learning. Besides, final exams alone are inadequate for assessing deep learning, as they often prioritize grades over understanding (Adams *et al.*, 2020; Beatson *et al.*, 2024).

The study also showed the importance of teamwork skills, a key component of professionalism in any field (Georgopoulou, 2024). Students reported greater opportunities for collaborative learning through group projects and online discussions, unlike the traditional classroom, where such activities were limited. This corroborates literature advocating for stronger integration of real-world accounting skills, such as teamwork, problem-solving, and time management, into university curricula (Vas *et al.*, 2018; Bupo, 2019; Boyce *et al.*, 2019; Kottara *et al.*, 2025d).

The evidence confirms that individual characteristics significantly influence learning outcomes in the blended environment, whereas in the traditional classroom, only Self-Efficacy showed notable effects. Among the characteristics examined, ICT Knowledge and Self-Efficacy had the most substantial impact in the blended learning setting, as evidenced by strong statistical significance. These results underscore the value of interactive, student-centered approaches in accounting education, demonstrating that blended learning environments, when supported by well-designed instructional tools and tasks, effectively leverage individual student strengths.

7. Conclusions

Data analysis revealed significant relationships between certain individual student characteristics and their learning outcomes, as measured by Knowledge (Y1) and Skills (Y2). The strength of these relationships varied by instructional environment, with blended learning amplifying the impact of these characteristics compared to the traditional classroom. A positive attitude toward the accounting course, or Predisposition, was significantly associated with higher Knowledge scores in the blended classroom, but showed no significant effect in the traditional classroom. This suggests that student motivation enhances learning outcomes more effectively in a blended setting, where physical and virtual instruction combine to foster engagement.

Computer literacy, or Prior ICT Knowledge, emerged as a critical determinant of success, particularly in the blended classroom. Tech-savvy students achieved significantly higher Knowledge and Skills scores, reflecting their ability to engage actively with digital tools. This underscores the importance of digital literacy in technology-enhanced learning environments.

Regular class attendance, or Presence, was significantly linked to Skills mastery in the blended classroom, emphasizing the role of consistency and participation in skill development. In contrast, attendance showed no significant impact in the traditional classroom, highlighting the blended format's unique ability to leverage student commitment. Self-Efficacy, defined as students' belief in their ability to achieve learning goals, exhibited strong positive correlations with both Knowledge and Skills across both classroom types, with slightly stronger effects in the blended setting. Students with high self-efficacy, driven by systematic effort and confidence, consistently outperformed their peers.

In summary, active engagement, intrinsic motivation, technical skills, and self-confidence are key drivers for success, particularly in blended learning environments. In traditional classrooms, only Self-Efficacy showed notable effects, indicating that individual characteristics play a more limited role in passive, teacher-centered settings.

These findings advocate for the adoption of enhanced blended learning approaches in higher education to better harness student strengths and optimize accounting education outcomes.

Author Contributions

Chara Kottara: Field researcher, introduction & background theory, data collection and manipulation, results, conclusions, manuscript preparation; Dimitris Drosos; Theodoros Anagnostopoulos; Sofia Maria Georgopoulou; Fragkiskos Gonidakis: conclusions; Dimitra Kavalieraki-Foka; Chara Kottara: conceptual framework: reviewer, senior researcher, methodology, conclusions, manuscript preparation; Chara Kottara; Supervisor, reviewer.

Ethics Declaration

Authors declared that the study was approved by the Committee for Research Ethics of the University of West Attica on 28/02/2023 with protocol code 14219/14-02-2023, for studies involving humans.

Funding Information

No funding is reported for this study.

Conflict of Interest Statement

The authors declare no conflicts of interest.

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