International Journal of Multidisciplinary Education and Research
www.multidisciplinaryjournals.in
ISSN: 2455-4588
Received: 06-01-2024, Accepted: 21-01-2024, Published: 05-02-2024
Volume 9, Issue 1, 2024, Page No. 26-31

Exploring the impact of prior ICT experience on physical education students' perceptions of the eClass course management system

Maria Giannousi
Department of Physical Education and Sports Science, Democritus University of Thrace, University Campus, Komotini, Greece

Abstract
The purpose of this study was to examine how the prior experience with Information and Communication Technologies (ICT) influences the perceptions of undergraduate Physical Education (PE) students regarding the "ease of use" and "usefulness" of the eClass Course Management System (CMS) at the Democritus University of Thrace. A total of two hundred seven students participated in this study. Their ages ranged from 19 to 24 years. Among the participants, 146 were male, and 61 were female. Students completed a survey to record how students evaluate the educational activities offered by an asynchronous CMS (e-Class) to support traditional classroom teaching. One-way analysis of variance for independent samples was used to examine the effect of the experience of using ICT on students' perception of the factors "ease of use" and "usefulness". The experience of using ICT, was derived from the combination of the survey's eight categories and included three levels: low, moderate, high. The results showed that students with "high" and "moderate" experience in ICT had a more positive perception regarding the ease of use and usefulness factors of the eClass CMS compared to students with "low" experience in ICT. In conclusion, students need proficiency in using ICT. Low computer self-efficacy may pose challenges in distance learning, but overcoming this obstacle enables individuals to better utilize asynchronous CMS.

Keywords: Perception, ICT experience, course management system, ease of use, usefulness, physical education

Introduction

The COVID-19 pandemic has underscored the necessity to enhance the digital preparedness of education and training systems, emphasizing qualities like resilience, accessibility, high quality, and inclusiveness. Furthermore, as part of the Digital Decade commitment, the European Union aims to ensure that 80% of the population aged 16-74 possesses at least basic digital skills by 2030 (European Union Council, 2023) [1].

Given this context and against the backdrop of the European Year of Skills in 2023, it is more pertinent than ever to address the digital transformation needs of education and training. This requires proactive measures across all educational levels, including pre-primary, primary, secondary, and vocational education and training, as well as higher education and adult learning. The focus should be on lifelong learning, catering to diverse demographic groups such as young people, adults, and professionals (European Union Council, 2023) [1].

Several studies have investigated factors affecting students' utilization of technology for learning, exploring aspects such as competency in technology use (Kennedy, Judd, Churchward, Gray & Krause, 2008) [2], perceived usefulness of technology (Goodyear & Ellis, 2008; Teo, 2011) [3, 4], perception of technological resources' utility (Clark, Logan, Luckin, Mee & Oliver, 2009) [5], and the presence of scaffolding in supporting technology-enhanced learning experiences (McLoughlin & Lee, 2010) [6].

Similarly, various frameworks for technology acceptance have been utilized to understand the factors influencing students' acceptance of technology. These frameworks include the Technology Acceptance Model (TAM; Davis, Bagozzi & Warshaw, 1989), TAM2 (Venkatesh & Davis, 2000) [8], and the Unified Theory of Acceptance and Use of Technology (UTAUT; Venkatesh, Morris, Davis & Davis, 2003) [9].

However, the TAM, proposed by Davis in 1989, stands as one of the most influential models for understanding technology acceptance (Kalayou, Endehabtu & Tilahun, 2020) [10]. It revolves around two primary factors that impact an individual's intention to use Information and Communication Technologies (ICT): perceived ease of use and perceived usefulness. For instance, a user perceiving Course Management Systems (CMS) as too difficult or a waste of time is less likely to adopt this technology. On the other hand, a user viewing CMS as offering essential mental stimulation and being easy to learn is more inclined to embrace the technology. Despite some criticisms directed at TAM, it remains a valuable general framework and aligns with various studies exploring the factors influencing users' willingness to adopt ICT (Braun, 2013) [11].

In the educational domain, the acceptance of technology is viewed as a fundamental requirement for learners to embrace information technology and enhance the learning process (Hsieh, Huang & Wu, 2017) [12]. Earlier research has delved into learners' acceptance of various types of technology, including mobile technology (Nikou and Economides, 2017), social media (Hsieh *et al*., 2017) [12], and Massive Open Online Courses (MOOCs) (Joo, So & Kim, 2018) [13]. However, the majority of these investigations have been implemented within the university setting (Granić, 2022) [14].

Particularly, Sanchez and Hueros (2010) [15] conducted a study involving 226 Spanish university students, revealing that technical support for accessing features and the perceived ease of use, attributed to an efficient system design, significantly contribute to the perceived usefulness of the Moodle platform. While the authors initially explored

the role of computer self-efficacy, which denotes an individual's perceived ability to use technology for learning tasks, they ultimately excluded it from their model due to non-significant effects. This decision was influenced by the observation that computer self-efficacy strongly loaded onto the perceived ease of use variable in the Technology Acceptance Model (TAM). This suggests that these two variables could be considered equivalent measures of one's perceived technological capability. However, it's worth noting that other studies have recognized computer self-efficacy as a potent control variable, illustrating the connections between an individual's behavior and thinking patterns and their technological environment. These studies propose that computer self-efficacy may indeed support the ease of use of Course Management System (CMS) tools, as demonstrated by research conducted by John (2015) [16], Chang, Hajiyev & Su (2017) [17], and Revythi & Tselios (2019) [18].

Similarly, Alshehri, Rutter & Smith (2020) [19] argued that students with prior computer experience seem to be more motivated to use CMS than less experienced users. This suggests that individuals with computer proficiency draw on their prior experience to influence their intentions. Consequently, students with more extensive experience in computer use are likely to have a stronger intention to use CMS.

Finally, in 2006 [20], Georgouli, Zachariou, Samaraku, Karolidis, & Prentakis conducted a study at the Technological Educational Institute of Athens, comparing the Computer Science department with the Energy Technology department. The sample consisted of 144 students from the Computer Science department and 550 students from the Energy Technology department. The difference in the number of participants in the two departments was partly attributed to the fact that the data collection period for the questionnaire used as a research tool in the first department was three times longer than in the second.

In this study, 70% of Computer Science students claimed to be "experienced," while 77% of Energy Technology students identified as "novice" users. Additionally, 70% of Computer Science students quickly familiarized themselves with the e-Class asynchronous learning platform, which was the subject of the study, compared to Energy Technology students who had lower percentages. This was expected, as Computer Science students are more familiar with ICT.

Another useful finding from this study is that Energy Technology students, due to the distinct nature of their subject and their lesser experience, choose to use simpler and more useful tools more frequently, such as announcements and documents, compared to Computer Science students who prefer tools like discussion forums and chat (Georgouli, Zachariou, Samaraku, Karolidis, & Prentakis, 2006) [20].

As suggested by the aforementioned research, the level of computer experience plays a crucial role in influencing the acceptance of services provided by a CMS among higher education students. However, according to Alshehri *et al*., (2020) [19], the effective implementation of CMS in developing nations has faced shortcomings, whether complete or partial. The underutilization of these systems has been noted, underscoring the ongoing need to investigate this challenge (Alshehri *et al*., 2020) [19]. Therefore, the purpose of this study was to examine how the prior experience with ICT influences the perceptions of undergraduate Physical Education (PE) students regarding the "ease of use" and "usefulness" of the eClass Course Management System at the Democritus University of Thrace. The study was guided by the following research questions:

1. How previous experience with ICT affects the viewpoints of undergraduate PE students in relation to the “user-friendliness” of the eClass CMS?
2. How previous experience with ICT affects the viewpoints of undergraduate PE students in relation to the “usefulness” of the eClass CMS?

Methods

Participants

A total of two hundred seven students (N = 207) from the Department of Physical Education and Sport Science (DPESS) at Democritus University of Thrace (DUTh) participated in this study. Their ages ranged from 19 to 24 years (M = 21.5, SD = 0.48). Among the participants, 146 (70.5%) were male, and 61 (29.5%) were female. Although students were invited to join the study as part of their ICT in Physical Education course, they were also given the choice to opt out. The participants were selected through the method of random sampling. Prior to the experiment, students were informed about the research's objectives, the teaching methodology, and their responsibilities, ensuring voluntary participation without impacting their grades.

Course Management System

The e-Class platform version 3.6 was utilized to provide an alternative method of presenting information compared to the traditional approach. This platform, recommended by the Academic Internet GUnet for supporting and enhancing asynchronous distance education services in tertiary education. This specific platform allowed the course administrator to organize their educational material and present it in various formats through the internet. On their part, students could have remote access to digital material, upload assignments and shared documents, and participate in discussions and conversations (GUnet Asynchronous Distance Education Group, 2019) [21].

Questionnaire

The CMS questionnaire of Vernadakis, Antoniou, Vernadakis, Giannousi & Kioumourtzoglou (2009) [22] was used to record and understand how students at DPESS, DUTh evaluate the educational activities offered by an asynchronous CMS (e-Class) to support traditional classroom teaching.

The first part of the questionnaire included questions related to the personal information of the participants. Meanwhile, the second part consisted of eight questions regarding students' experience in using ICT on a five-point Likert scale (1=poor, 2=moderate, 3=good, 4=very good, 5=excellent). The third part comprised five dimensions (interaction, participation, educational material, usefulness, ease of use) and 21 items-variables reflecting perception levels of eClass’ use in courses, indicating agreement or disagreement on a five-point Likert scale (1=strongly disagree, 2=disagree, 3=neither agree nor disagree, 4=agree, 5=strongly agree). Finally, the fourth part included questions about the use’s frequency of the 11 educational tools provided by the e-Class CMS on a five-point Likert

scale (1=not at all, 2=a little, 3=somewhat, 4=very, 5=extremely).

However, since this research was part of an ongoing 3-year project, only the second part focusing on the perceived experience in using ICT and the two dimensions (usefulness and ease of use) from the third part related to the perceived use of e-Class in courses were used as part of the analysis.

Procedure

The research was conducted in December 2019 at the computer laboratory of the DPESS, DUTh, three months after the commencement of the course "ICT in Physical Education." In the execution of the study, the 18 computers in the laboratory were utilized. Each computer had the capability to connect to an electronic multiple-choice response system for completing and submitting the questionnaire. The time allocated for completing the responses was 30 minutes.

During the data collection process, participants, after ensuring the confidentiality and anonymity of their responses, answered the questionnaire in real-time, describing their experience with the use of educational services provided by the asynchronous distance education platform "e-Class." Upon completing the questionnaire, participants were requested to submit their responses. These responses were encoded and stored in a database by the researchers each time a student selected the confirmation button.

Statistical analysis

Analysis of variance for independent samples (One-Way ANOVA) was used to examine the effect of the experience of using ICT (independent variable) on students' perception of the factors "ease of use" and "usefulness" (dependent variable). The independent variable, the experience of using ICT, was derived from the combination of the eight categories (Table 1) and included three levels: low, moderate, high. Participants with scores less than 1.67 were considered "low users" and formed the 1st group. Participants with scores greater than 1.66 and less than 3.34 were considered "moderate users" and formed the 2nd group. Meanwhile, participants with scores greater than 3.33 were considered "high users" and formed the 3rd group. The definition used for the different levels of the independent variable, which pertains to familiarity with ICT, closely resembled those utilized in similar studies documented in international literature (Strayhorn, 2006). Homogeneity of variance was examined with Levene's test, and the normality of the sample was assessed with the Shapiro-Wilk test (Green & Salkind, 2017) [23]. The level of significance for measurements was set at ($p < 0.05$).

The hypotheses for this study were as follow:

H01: There will be no statistically significant difference in the mean scores of the factor "ease of use" between the experience of using ICT groups (low, moderate and high).

H02: There will be no statistically significant difference in the mean scores of the factor "usefulness" between the experience of using ICT groups (low, moderate and high).

Results

Descriptive analysis

Out of the 207 participants in the sample, 75 were first-year students, representing 36.2%. Additionally, 50 participants were second and third-year students, accounting for 24.2%. There were 76 fourth-year students, making up 36.7%, and the remaining 6 were students from previous years, representing 2.9%. Among the participants, 146 were men, constituting 70.5%, while 61 were women, accounting for 29.5%.

In addition to the academic year and gender, students were asked to report their experience with the use of ICT. Table 1 provides more information on the distribution. The most frequently reported category in the use of ICT was communication systems (51.2%), with a positive rating ranging from "very good" to "excellent." Following this, there were Course Management Systems (50.7%), word processors (49.7%), presentation applications (31.8%), computer maintenance (26.1%), spreadsheets (21.7%), graphic applications (19.4%), and digital libraries (16.9%).

Table 1: Distribution of students' frequency regarding the use of ICT.

	Not at all	A little	Somewhat	Very	Extremely
Text Processors (Word, etc.)	14 (6,8%)	29 (14%)	61 (29,5%)	75 (36,2%)	28 (13,5%)
Spreadsheets (Excel, etc.)	29 (14%)	74 (35,7%)	59 (28,5%)	28 (13,5%)	17 (8,2%)
Presentation Software (PowerPoint, etc.)	34 (16,4%)	56 (27,1%)	51 (24,6%)	51 (24,6%)	15 (7,2%)
Graphic Applications (Photoshop, Illustrator, etc.)	58 (28%)	57 (27,5%)	52 (25,1%)	26 (12,6%)	14 (6,8%)
Communication Systems (Internet, email, chat, etc.)	19 (9,2%)	26 (12,6%)	56 (27,1%)	55 (26,6%)	51 (24,6%)
Digital Libraries	59 (28,5%)	62 (30%)	51 (24,6%)	28 (13,5%)	7 (3,4%)
Computer Maintenance (Updates, etc.)	60 (29%)	57 (27,5%)	36 (17,4%)	35 (16,9%)	19 (9,2%)
Course Management Systems (e-Class, Moodle, etc.)	11 (5,3%)	38 (18,4%)	53 (25,6%)	63 (30,4%)	42 (20,3%)

The impact of experience with ICT on e-Class' ease of use

One-Way analysis of variance was employed to examine the influence of experience with ICT on students' perception regarding the "ease of use" factor. The analysis revealed that the experience with ICT has a statistically significant impact on students' perception of eClass' ease of use, $F(2, 204) = 9.46$, $p = .000$. Therefore, students' experience with ICT affects their perception on the eClass' ease of use.

Pairwise comparisons using t-tests with a Bonferroni adjustment were employed to determine how different levels of familiarity with ICT impact students' perception of eClass' ease of use. The analysis revealed a statistically significant distinction between students with "low" experience in ICT ($M = 3.15$, $SD = .68$) and those with "moderate" experience ($M = 3.51$, $SD = 0.70$), with the "moderate" experience group performing better (Mean Difference = .36, $p = .007$). Similarly, a statistically significant distinction was found between students with "low" experience ($M = 3.15$, $SD = .68$) and those with "high" experience ($M = 3.63$, $SD = .64$), with the "high" experience group demonstrating superior performance (Mean Difference = .48, $p = .000$).

As illustrated in Figure 1, students with “high” and “moderate” experience in ICT had a more favorable perception of the eClass’ ease of use compared to students with “low” experience in ICT.

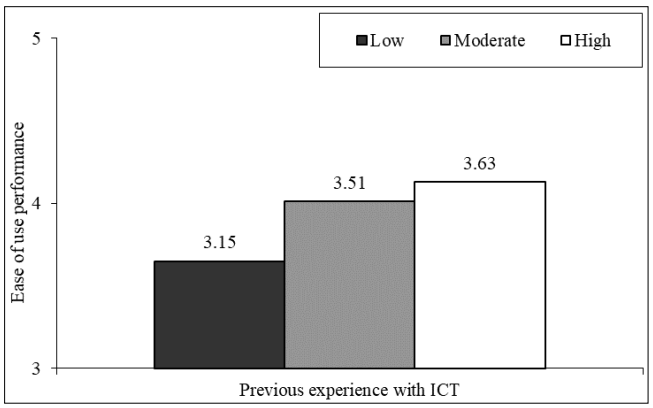

Fig 1: Mean scores of the experience with ICT groups (low, moderate and high) on eClass’ ease of use.

The impact of experience with ICT on e-Class’ usefulness

One-Way analysis of variance was employed to examine the influence of experience with ICT on students' perception regarding the "usefulness" factor. The analysis revealed that the experience with ICT has a statistically significant impact on students' perception of eClass’ usefulness, F (2, 204) = 9.5, p = .000. Therefore, students' experience with ICT affects their perception on the eClass’ usefulness.

Pairwise comparisons using t-tests with a Bonferroni adjustment were employed to determine how different levels of familiarity with ICT impact students' perception of eClass’ usefulness. The analysis revealed a statistically significant distinction between students with “low” experience in ICT (M = 3.67, SD = .54) and those with “moderate” experience (M = 3.96, SD = .56), with the “moderate” experience group performing better (Mean Difference = .36, p = .007). Similarly, a statistically significant distinction was found between students with "low" experience (M = 3.67, SD = .54) and those with “high” experience (M = 4.06, SD = .59), with the “high” experience group demonstrating superior performance (Mean Difference = .4, p = .000).

As illustrated in Figure 2, students with “high” and “moderate” experience in ICT had a more favorable perception of the eClass’ usefulness compared to students with “low” experience in ICT.

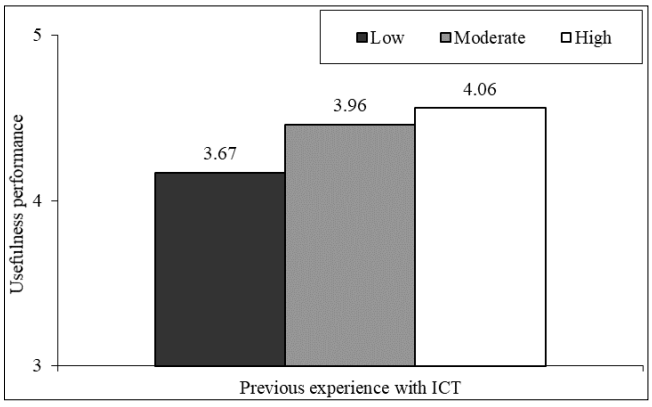

Fig 2: Mean scores of the experience with ICT groups (low, moderate and high) on eClass’ usefulness.

Discussion

Recently, there has been a revived interest in computer self-efficacy, driven by the widespread use of computing devices. Computer self-efficacy pertains to an individual's competence in applying particular computer skills for the execution of computer-related activities. According to Loar (2018) [24], computer self-efficacy is linked to favorable learning experiences and outcomes, encompassing the effectiveness of training, perceived ease of use, and intentions to utilize computers. to examine how the prior experience with ICT influences the perceptions of undergraduate Physical Education (PE) students regarding the "ease of use" and "usefulness" of the eClass Course Management System at the Democritus University of Thrace. To achieve this goal, precise inquiries were developed, thoroughly analyzed, and the study's findings pertaining to these questions are detailed below. The first research question sought to explore the impact of prior experience with ICT on the perspectives of undergraduate PE students regarding the "user-friendliness" of the eClass CMS. The study's data do not support the initial hypothesis, which suggested that there would be no statistically significant difference in the mean scores for the factor "ease of use" among groups with varying levels of experience using ICT groups (low, moderate and high).

The data analysis revealed a statistically significant difference between students with "low" experience in ICT and those with "moderate" experience, with the "moderate" experience group demonstrating superior performance. Similarly, a statistically significant difference was observed between students with "low" experience in ICT and those with "high" experience, indicating that the "high" experience group exhibited superior performance. Essentially, the results indicated that students with "high" and "moderate" experience in ICT held a more positive perception of the eClass platform's ease of use compared to students with "low" experience in ICT.

Regarding the second hypothesis, which proposed that there would be no statistically significant difference in the mean scores for the factor "usefulness" among groups with different levels of experience using ICT (low, moderate, and high), the results also failed to substantiate this hypothesis. The data analysis unveiled a statistically significant distinction between students with "low" experience in ICT and those with "moderate" experience, with the "moderate" experience group showcasing superior performance. Likewise, a statistically significant difference was noted between students with "low" experience in ICT and those with "high" experience, signifying that the "high" experience group displayed superior performance. In essence, the results suggested that students with "high" and "moderate" experience in ICT had a more favorable perception of the eClass platform's usefulness compared to students with "low" experience in ICT.

The outcomes of this study diverge from those of Stein, Wanstreet, Calvin, Overtoom & Wheaton (2005) [25], where no statistically significant difference was reported between computer experience and perceptions of using online learning management systems. In contrast, Reynolds and Rucker (2002) [26] and Loar (2018) [24] discovered that individuals with positive experiences with ICT generally developed a favorable perception of technology and the use of online systems compared to those with no ICT experience

or those with negative experiences, which is consistent with the results of this research.

Evaluating the outcomes of the present research, it is crucial to consider factors that strongly influence students' acceptance of a technology like a course management system. Firstly, the study participants were students from DPESS, DUTh. Which means that the generalization of results is limited to departments operating under similar conditions within the university. Secondly, the findings are specific to the e-Class online platform, and different results might be observed with alternative asynchronous e-learning systems featuring diverse content. Thirdly, the study's sample size and the age range of participants are quite specific, and a larger, more diverse sample would enhance the robustness of the research design for assessing the acceptance of an asynchronous CMS. Finally, an important limitation is the influence of the teacher's personality, education, and knowledge, which could impact the evaluation of the educational process differently.

Conclusions

In conclusion, it seems that since distance education relies heavily on computers and communication networks, participants are required to engage extensively with technology. Consequently, their proficiency in effectively utilizing information and communication technologies becomes crucial. Low levels of computer self-efficacy can potentially pose challenges in the distance learning educational process. Conversely, when there is a lack of limited computer self-efficacy, this obstacle to distance learning diminishes, and individuals become better equipped to proficiently use asynchronous course management systems.

Therefore, to enhance user satisfaction and promote greater acceptance of CMS like eClass, it is imperative to improve education and training initiatives. This involves providing students with a more comprehensive understanding of CMS and related technology.

References

1. European Union Council. Digital skills and competences and successful digital education and training: fit for the digital era. November 23, 2023. Accessed January 3, 2024. https://www.consilium.europa.eu/en/press/press-releases/2023/11/23/digital-skills-and-competences-and-successful-digital-education-and-training-fit-for-the-digital-era/
2. Kennedy GE, Judd TS, Churchward A, Gray K, Krause KL. First year students' experiences with technology: Are they really digital natives? Australasian Journal of Educational Technology, 2008, 24(1). https://doi.org/10.14742/ajet.1233
3. Goodyear P, Ellis RA. University students' approaches to learning: rethinking the place of technology. Distance Education,2008:29(2):141-152. https://doi.org/10.1080/01587910802154947
4. Teo T. Factors influencing teachers' intention to use technology: Model development and test. Computers & Education,2011:57(4):2432-2440. https://doi.org/10.1016/j.compedu.2011.06.008
5. Clark W, Logan K, Luckin R, Mee A, Oliver M. Beyond Web 2.0: mapping the technology landscapes of young learners. Journal of Computer Assisted Learning,2009:25:56-69. https://doi.org/10.1111/j.1365-2729.2008.00305.x
6. McLoughlin C, Lee MJW. Personalised and self-regulated learning in the Web 2.0 era: International exemplars of innovative pedagogy using social software. Australasian Journal of Educational Technology, 2010, 26(1). https://doi.org/10.14742/ajet.1100
7. Davis FD, Bagozzi RP, Warshaw PR. User Acceptance of Computer Technology: A Comparison of Two Theoretical Models. Management Science, 35(8), 982-1003. https://doi.org/10.1287/mnsc.35.8.982.
8. Venkatesh V, Davis FD. A Theoretical Extension of the Technology Acceptance Model: Four Longitudinal Field Studies. Management Science,2000:46(2):186-204. https://doi.org/10.1287/mnsc.46.2.186.11926
9. Venkatesh V, Morris MG, Davis GB, Davis FD. User acceptance of information technology: Toward a unified view. MIS Quarterly: Management Information Systems,2003:27:425-478. https://doi.org/10.2307/30036540
10. Kalayou MH, Endehabtu BF, Tilahun B. The Applicability of the Modified Technology Acceptance Model (TAM) on the Sustainable Adoption of eHealth Systems in Resource-Limited Settings. Journal of Multidisciplinary Healthcare,2020:13:1827-1837. https://doi.org/10.2147/JMDH.S284973
11. Braun MT. Obstacles to social networking website use among older adults. Computers in Human Behavior,2013:29:673–680. https://doi.Org/10.1016/j.chb.2012.12.004.
12. Hsieh JSC, Huang YM, Wu WCV. Technological acceptance of LINE in flipped EFL oral training. Computers in Human Behavior,2017:70:178-190. https://doi.org/10.1016/j.chb.2016.12.066
13. Joo YJ, So HJ, Kim NH. Examination of relationships among students' self-determination, technology acceptance, satisfaction, and continuance intention to use K-MOOCs. Computers and Education,2018:122:260-272. https://doi.org/10.1016/j.compedu.2018.01.003
14. Granić A. Educational Technology Adoption: A systematic review. Education and information technologies,2022:27(7):9725–9744. https://doi.org/10.1007/s10639-022-10951-7
15. Sánchez RA, Hueros AD. Motivational factors that influence the acceptance of Moodle using TAM. Computers in human behavior,2010:26(6):1632-1640.
16. John SP. The integration of information technology in higher education: A study of faculty's attitude towards IT adoption in the teaching process. Contaduría y Administración,2015:60:230-252. https://doi.org/10.1016/j.cya.2015.08.004
17. Chang CT, Hajiyev J, Su CR. Examining the students' behavioral intention to use e-learning in Azerbaijan? The general extended technology acceptance model for E-learning approach. Computers & Education,2017:111:128-143.
18. Revythi A, Tselios N. Extension of Technology Acceptance Model by using System Usability Scale to assess behavioral intention to use e-learning, Education and Information Technologies,2019:24(4):2341-2355.
19. Alshehri A, Rutter M, Smith S. The Moderating Effects of Experience and Training on Students' Use of a

Learning Management System. International Journal of Information and Education Technology,2020:10(9):685-693. https://doi.org/10.18178/ijiet.2020.10.9.1444
20. Georgouli K, Samaraku M, Prentakis P, Zachariou P, Karolidis D. e-CLASS Platform: Usage and Acceptance by Students of the Technological Educational Institute of Athens. In D. Psillos, V. Dagdilelis (Eds.), Proceedings of the 5th Panhellenic Conference with International Participation on "Information and Communication Technologies in Education". Thessaloniki, 2006, 915-921.
21. GUnet Asynchronous Distance Education Group. Platform Description (Open eClass 3.6), 2019. Accessed January 4, 2024. https://docs.openeclass.org/en/3.6/detail_description
22. Vernadaki Z, Antoniou P, Vernadakis N, Giannousi M, Kioumourtzoglou E. Questionnaire development for the evaluation of the asynchronous e-learning platform "e-Class" as an instructional tool supporting the traditional method of instruction. In G. Kosta (Ed.), Proceedings of the 16th International Conference on Physical Education & Sports. Komotini: DPESS, DUTh, 2009, 3-10.
23. Green SB, Salkind NJ. Using SPSS for Windows and Macintosh: Analyzing and understanding data (8th ed.). Upper Saddle River, NJ: Pearson, 2017.
24. Loar EA. Computer self-efficacy revisited. Journal of Instructional Research,2018:7:55-59. https://doi.org/10.9743/JIR.2018.4
25. Stein DS, Wanstreet CE, Calvin J, Overtoom C, Wheaton JE. Bridging the Transactional Distance Gap in Online Learning Environments, American Journal of Distance Education,2005:2:105-118. https://doi.org/10.1207/s15389286ajde1902_4
26. Rucker J, Reynolds S. Learners and technology: experience, attitudes, and expectations. In A. M. Remp (Ed.), Technology, Methodology, and Business Education: Yearbook. Reston, Va.: National Business Education Association, 2002, 1-20.