An Investigation into Postgraduate Students' Knowledge and Attitudes toward Using the E-Learning Environment in UK Universities

By
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Abstract: In recent decades, information and communication technologies (ICTs) have played a vital role in developing the learning process in higher education. It is argued that ICTs allow teachers and students to learn according to their chosen learning styles. However, their knowledge of using this technology and their attitudes toward it might affect its efficiency. This small-scale study investigated students' knowledge of using the e-learning environment (ELE) and their attitude toward it as part of the postgraduate course process at a UK university. In the present study, quantitative research is adopted to test the hypotheses. Thus, the data were collected from 31 participants through a closed-ended questionnaire. Pearson's correlation, independent samples *t*-test, and multiple regression were used to test the hypotheses and to investigate the relationship between the postgraduate students' knowledge of using the ELE and their attitude toward it, as well as the relationship between students' status (campus or distance), their first language (English or other), and their knowledge/attitudes toward using the ELE.

The main finding was those distance learners had a higher knowledge of using ELE than campus learners and that students with English as a first language had a higher knowledge of using ELE than students with other first languages. At the same time, there were no differences in attitudes among them. The results showed that the attitude score, campus status, and first language could all predict the knowledge score, but only status had a significant independent effect on the knowledge score.

Keywords: E-learning environment (ELE), Information and Communication Technology (ICT), Online Learning, Postgraduate Students, Knowledge, Attitude, Higher Education.

Introduction:

These days, it's hard to imagine living without some type of information and communication technology (ICT). The current trend is

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likely to persist and eventually become a practical necessity in people's professional, social, and private spheres.

Education is one of the disciplines that has altered dramatically since the technological revolution became a part of people's lives. Many countries, including the United States, Canada, and the United Kingdom, have integrated ICT into their educational systems and school administrations (Organisation for Economic Co-operation and Development, 2016; Park, 2011) so as to improve the teaching and learning processes (Wong, et al., 2013) ICT defined as technologies that provide access to information through telecommunication. It includes the internet, wireless networks, cell phones, and other communication media (Ratheeswari, 2018; Schulz, et al. 2023).

ICTs were not only applied in schools' environments, but also introduced in universities in order to improve the higher education environments. Many universities globally have been enabled to implement ICTs through digital technology, including web pages and learning management systems, in order to enhance both lecturers' teaching and students' learning process (Hofer, et al. 2021; Wong, et. al., 2013). For instance, According to Mbodila et al. (2013) and Putro, et al., (2023), including ICTs in higher education teaching activities boosts interaction between lecturers and students and improves the quality of the teaching and learning process. However, Schulz et al. (2023) noted that in order to increase the use of ICTs in higher education, policymakers must be considered, as they play an important role in supporting both students' learning and lecturers' teaching processes.

The rapid development and widespread adoption of the internet, wireless networks, cell phones, and interactive multimedia apps have resulted in the efficient use of ICTs in the educational setting (Hunter, 2015; Asad, et. al., 2021). As a result of this growth, a new educational environment, such as e-learning, has emerged. Robinson (2009) defined it as a group of ICT technology-based applications that support the learning process, such as web-based learning, networked learning, online learning, and virtual learning.

E-learning environment becomes increasingly significant in higher education (Dyrbye, et. al., 2009). Accordingly, the adoption of e-learning in education, especially in higher educational institutions, does provide both students and lecturers several advantages that can support the learning and teaching process in many ways. For instance, the modern environment gives students a chance to share knowledge, ideas, and opinions with others, exchange resources, and interact with others to build knowledge through discussion forums (Arkorful &

Abaidoo, 2015; Al-Fraihat, et. al., 2017). However, the important question is: Are postgraduate students willing to use the e-learning environment effectively as a part of their studying program? To answer this question, the researcher aimed in this study to obtain helpful results about postgraduate students' knowledge of and attitudes toward using the e-learning environment (ELE).

Research Problem:

As a result of the evolution of information and communication technologies (ICTs), the e-learning environment has become an effective form in education and particularly in higher education (Hunter, 2015; Al Rawashdeh, et al., 2021). Several studies, such as Ayu, (2020); Bhongade, et al., (2018); and Al-Fraihat, et. al., (2017), have revealed that the e-learning environment provides both students and lecturers many advantages that can enhance learning and teaching process. It helps both students to learn in a more effective way and faculty members in facilitating the education process. The e-learning environment gives students particularly postgraduate students, who face difficulties in attending campus courses due to certain circumstances, a good chance to join courses and encourage them to complete their studies (Putro, et al., 2023). Students' level of intrinsic drive is a significant predictor of their achievement in online courses. Personal motivation plays a key role in determining how well ICTs are integrated into the learning process. Students need help with their digitally enhanced learning to fully realize the benefits of information and communication technologies in the classroom (Ramadan, et al., 2019).

Several studies examined how demographics affect students' e-learning attitudes. Previous research found that socio-demographic factors like gender, not socio-economic ones like monthly pay, level of education, or psychological issues, influence internet usage (Paul & Jefferson, 2019; Asad, et. al., 2021). University students in developing nations generally like e-learning. According to (Joo, et al., 2018), most students like e-learning since it motivates them. Research on student individual variations, such as gender, technology use, and skills, is uncommon, according to prior studies. This study aimed to fill this gap in related literature (de Melo Pereira, et al., 2015; Daftari & Tavil, 2017). More and more students are choosing to take their courses online. They prefer how conventional classrooms are flexible and responsive to students' needs. With today's advanced technology,

universities may now deliver quality online education. Because of this change in instructional format, universities must reconsider how they provide their curriculum.

However, the question is, are postgraduate students willing to use the e-learning environment effectively as a part of their studying program? To answer this question, I aimed in this study to obtain helpful results about postgraduate students' knowledge of and attitudes toward using the e-learning environment. Also, I investigate the relationship between the postgraduate students' knowledge of using ELE and their attitude toward it, the relationship between students' status (campus or distance) and their knowledge/attitude toward using ELE, and the relationship between the student's first language and their knowledge/attitudes toward ELE.

Research Questions:

The study seeks to answer the following questions:

1) What is the student's knowledge of using the e-learning environment?

2) What are the students' attitudes toward using the e-learning environment?

Research Objectives:

The objectives of an investigation of postgraduate students' knowledge and attitudes regarding the e-learning environment are as follows:

1) Assess the level of knowledge and familiarity with e-learning tools and technologies among postgraduate students.

2) Determine the attitudes of postgraduate students toward using e-learning environments for their studies.

3) Determine the factors that influence the adoption of e-learning technologies by postgraduate students.

4) 4. Evaluate the efficacy of e-learning environments in supporting the learning outcomes of postgraduate students.

5) 5. To investigate the obstacles and challenges postgraduate students confront when utilizing e-learning environments.

6) Provide suggestions for enhancing the design and implementation of e-learning environments to better meet the requirements of postgraduate students.

7) To contribute to a broader understanding of how technology can be used to improve instruction and learning in higher education settings.

The Importance of Research

The investigation into the knowledge and attitudes of postgraduate students regarding the e-learning environment is crucial for a number of reasons.

1) Enhancing the efficacy of e-learning: The investigation can help identify knowledge and attitude deficits among postgraduate students regarding e-learning, which can be used to enhance the design and delivery of e-learning programs.

2) Understanding the attitudes of postgraduate students toward e-learning can assist educators in designing more engaging and interactive learning experiences that accommodate to their preferences.

3) E-learning provides access to pupils who may not have access to traditional classroom settings due to geographic or other constraints. Investigating the knowledge and attitudes of postgraduate students toward e-learning can ensure that these students are not left behind.

4) The results of this study can inform policy decisions regarding the implementation of e-learning programs in institutions of higher education

5) Preparing students for future careers as technology continues to play an important role in a variety of industries, investigating postgraduate students' knowledge and attitudes toward e-learning can assist in preparing them for future careers that require digital literacy skills.

Hypotheses:

The study will test the following hypotheses:

H1: There will be a significant positive correlation between the postgraduate students' knowledge of using the e-learning environment (ELE) and their attitudes.

- H01: There will be no significant positive correlation between postgraduate students' knowledge of using the e-learning environment (ELE) and their attitudes toward it.

- H2: If students are distance learners, they will have a higher knowledge level of ELE than campus students.

- H02: If students are distance learners, they will not have a higher knowledge level of ELE than campus students.

- H3: If students are distance learners, they will have a more positive attitude toward ELE than campus students.

- H03: If students are distance learners, they will not have a more positive attitude toward ELE than campus students.

- H4: If students are native English speakers, they will have a higher knowledge level of using ELE than non-native speakers.

- H04: If students are native English speakers, they do not have a higher knowledge level of using ELE than non-native speakers.

- H5: If students are native English speakers, they will have a more positive attitude toward using ELE than non-native speakers.

- H05: If students are native English speakers, they will not have a more positive attitude toward using ELE than non-native speakers.

- H6: Postgraduate students' knowledge of using ELE will be predictable based on their attitudes toward using it, status, and first language.

- H06: Postgraduate students' knowledge of using ELE will not be predictable based on their attitudes toward using it, status, and first language.

Literature Review:

E-learning environment was seen as one of the ICTs' forms that have caused many changes in educational delivery and learning processes (Al Rawashdeh, et al., 2021). For instance, it helps university students to learn at the appropriate time and place through interactive content based on multimedia, such as Web 2.0 applications. Both Ayu, (2020) and Bhongade, et al., (2018) added that these applications allow students to exchange information, construct knowledge, and share content. Dyrbye et al. (2009) added that the e-learning environment has enhanced distance learning in higher education. It gives students who cannot attend classes on campus a great chance to attend them distantly. Very briefly, one of the main reasons for applying e-learning in higher educational institutions is to help their students who face difficulties in attending campus courses by joining courses via the online learning environment. Dyrbye et al. (2009) give some examples that illustrate the previous point of view: for students who cannot study outside their own country due to work, family, or other circumstances, the e-learning environment does give access to many universities around the world without the need for physical attendance. According to Eom (2023), the e-learning environment provides students with learning flexibility. It provides a variety of options that enable students to study in their preferred manner, such as the use of online libraries and other online information resources, as well as access to university websites.

However, we cannot deny that e-learning environment may cause a sense of isolation or a lack of community between lecturers and their students due to the delay of feedback among them via e-mail messages and other communication tools (Bhongade, et al., (2018). Moreover, Al Rawashdeh, et al., 2021) and Eom, (2023) noted some challenges in using e-learning that might affect educational practice, such as students' and teachers' experiences of using e-learning effectively, and their beliefs and views about this technology as part of the learning process. Mishra and Mishra (2011) examined the e-learning experiences at three prestigious universities that offer online courses to students and professionals. They discovered that students' and instructors' perceptions of e-learning as a challenge significantly affects their learning and teaching processes. Therefore, they believed that both instructors and students require training in order to facilitate e-learning.

Regarding students' knowledge of and attitudes toward using the e-learning environment as a part of their study program, several research studies have been conducted. For instance, Adewole-Odeshi (2014) argued that undergraduate students who hold a positive attitude toward using the e-learning environment in their course would affect positively their knowledge. In other words, students who spend more hours using this environment, whether doing homework or searching by using an online library, would develop their learning and learn more quickly than those who learn through the traditional way based only on teachers, due to the flexibility that e-learning offers. This high level of knowledge that students have received from the e-learning environment also results in gaining higher computer skills (Li and Lee, 2016). Li and Lee (2016) argued that distance students have received higher levels of computer skills than others, because of their increased use of e-learning environments.

2. Methodology:

The current study adopted quantitative research in order to allow the researcher to test the hypotheses. In this small-scale quantitative study, a closed-ended questionnaire has been designed to meet the purposes of the study. Creswell & Creswell (٢٠١٧) explained that the closed-ended questionnaire is suitable for studies that search for a numeric description of trends and opinions of a population by studying a sample from this population. Dammak, (2015) also described it more precisely as "the techniques or procedures used to gather and

collect data related to some research question or hypothesis". The data was collected from 31 participants from the postgraduate program in the academic year 2020-2021 at the UK University (21 campus students and 10 distance students) through the closed-ended questionnaire.

2.1 Instrument of Data Collection:

The current study used a closed-ended questionnaire as a tool for collecting data from the study sample. The closed-ended questionnaire was designed according to previous studies and literature related to the use of e-learning environments in higher education. The closed-ended questionnaire measures the student's knowledge of, and attitude toward, using ELE. The questionnaire consists of the following sections:

1- Knowledge of Using ELE: The knowledge part of the questionnaire contains 12 multiple-choice questions scoring 1 for a right answer and 0 for a wrong answer.

2- Attitude toward Using ELE: The attitude part of the questionnaire contains 19 statements that represented the student's attitude toward using ELE, by stating their level of agreement on a five-point Likert scale (SA = strongly agree, A = agree, N = neutral, D = disagree, and SD = strongly disagree). The positively worded attitude items (items 1, 2, 3, 4, 5, 6, 7, 8, 12, 13, 15, 16, 18, and 19) were scored as follows: strongly agree = 5, agree = 4, neutral = 3, disagree = 2, and strongly disagree = 1; for the negatively worded items (items 9, 10, 11, and 14), this scoring was reversed.

3- Background Data:

- Status: Campus or distance student.

- First language: English or another language.

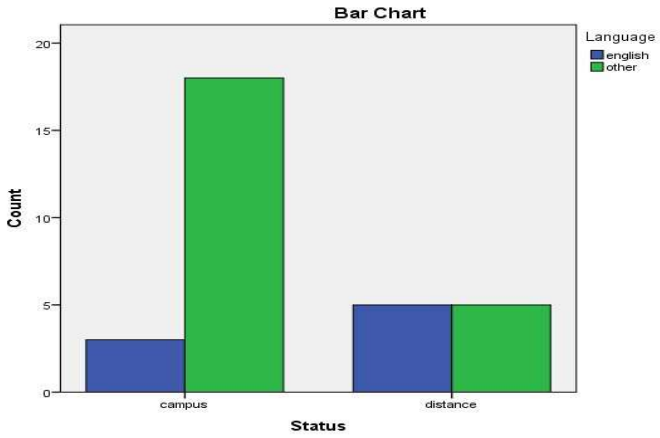
- Name of the participant: Since information on the participant has to be treated as anonymous and confidential, the participant's name is not compulsory.

2.2 Demographic Description of the Sample:

The study sample was selected from the registered students, both campus and distance, studying in the postgraduate program in the academic year 2020-2021. The number of students is about 40, all received a copy of the questionnaire, either by email or on paper, and 31 responses were received fully completed. It means that a 77% response rate was achieved. Table 2.1 and Graph 1 show the composition of the sample by status and first language.

Table 2.1: Status and the first language of sample students.

Status* Language Cross tabulation Count		Language		Total
		English	Other	
Status	Campus	3	18	21
	Distance	5	5	10
Total		8	23	31



Graph 1: Status and first language of sample students.

Table 2.1 and Graph 1 show that there were 21 campus students and 10 distance students, that is, 68% campus and 32% distance. Therefore, the sample was predominantly campus students. There were 8 students with English as a first language and 23 students with other first languages, that is, 26% English language and 74% other first languages. It is obvious that students with other first languages made up the majority of the sample. Breaking the sample down by status and first language together, the number of campus students with other first languages (18) was much higher than the number of campus students with English as a first language (3), while there was an equal number of distance students with other first languages (5) and English as a first language (5).

2.3 Validity:

To ensure the validity of my questionnaire, some experts in scientific methodology from the UK University reviewed the items of the instrument. They recommended that I separate some knowledge items from attitude items in order to be clearer, and they advised me to add more attitude items related to students' feelings about the program. Furthermore, my colleagues read my items and advised me to keep the

language simple in order to avoid misunderstandings. This improved the content validity of the questionnaire and led to the final version.

2.4 Reliability:

There are different ways of measuring the internal consistency of a set of items, but the most common test that can be used is Cronbach's coefficient alpha. Values of reliability range from zero to one, and the higher values refer to greater reliability. Oppenheim (1992) proposed that the reliability of an instrument should be done at the pilot stage so as to make sure of it before the main study. However, he conceded that, due to time limitations, reliability could be tested at the same time as data collection. Therefore, I tested the reliability of the questionnaire after the data collection.

2.4.1 Reliability of the Knowledge Scale:

It has been recommended that the value of Cronbach's alpha should not be less than 0.7 (Pallant, 2020). Table 2.2 shows that the value of Cronbach's alpha of the 12 knowledge items in the questionnaire was .684. This means that the value of the reliability of the knowledge scale was somewhat low.

Table 2.2: Reliability of the knowledge scale.

	Cronbach's alpha	Cronbach's alpha Based on Standardized Items	N of Items
Reliability Statistics	.684	.675	12

The SPSS package indicted that if item 8 was deleted, the value of Cronbach's alpha would increase to .701. Therefore, the researcher decided to remove item 8 in order to improve the reliability of the knowledge scale. Table 2.3 presents the new value of Cronbach's alpha after the omission of item 8.

Table 2.3: Reliability of the knowledge scale after the removal of item 8.

	Cronbach's alpha	N of Items
Reliability Statistics	.701	11

Therefore, the knowledge scale was computed from the sum of the score on 11 items (omitting item 8).

2.4.2 Reliability of the Attitude Scale:

Cronbach's alpha was also used to test the reliability of the attitude scale in the questionnaire. Table 2.4 demonstrates that the value of alpha for the 19 attitude items was high, at .945. This means that the attitude scale was extremely reliable. Therefore, all 19-attitude items were retained in the attitude scale.

Table 2.4: Reliability of the attitude scale.

Reliability Statistics	Cronbach's alpha	Cronbach's alpha Based on Standardized Items	N of Items
	.945	.947	19

Data Analysis and Results:

2.5 Checking the Normality of the Knowledge and Attitude Scales:

The normality of distribution of the scores on the knowledge test was investigated by the Shapiro-Wilk test and Kolmogorov-Smirnov test. Table 3.1 demonstrates that the significance level of the S-W test was .058. A slightly greater level than .05 indicates that the distribution of knowledge scores is not quite significantly different from a normal distribution. However, the significance level of the K-S test was .034, which suggests that the knowledge scores were not distributed normally. Therefore, the tests gave contradictory results.

Table 3.1: Normality tests for the knowledge and attitude scales.

Tests of Normality	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Knowledge Scores	.163	31	.034	.935	31	.058
Attitude scores	.131	31	.191	.933	31	.053

a. Lilliefors Significance Correction

To further explore the distribution of knowledge scores, the histograms and normality curves are shown in Appendix D, where it can be seen that they more or less follow the normal curve except for the five participants who scored very highly (11/11). This is confirmed in the normal Q-Q plot and the detrended normal Q-Q plot, where the points lie close to the line apart from those of the very high scorers.

For the attitude scores, the significance level on the S-W test was .053, which is slightly greater than .05, showing that the distribution of the attitude scores is not significantly different from the normal distribution. On the K-S test, the significance level of the attitude score was .191, showing that it was distributed normally. The results of the normality tests were supported by the histogram, Q-Q plot, and detrended Q-Q plots (see Appendix E).

Since the knowledge and attitude scores are normally distributed, parametric tests can be used throughout this investigation.

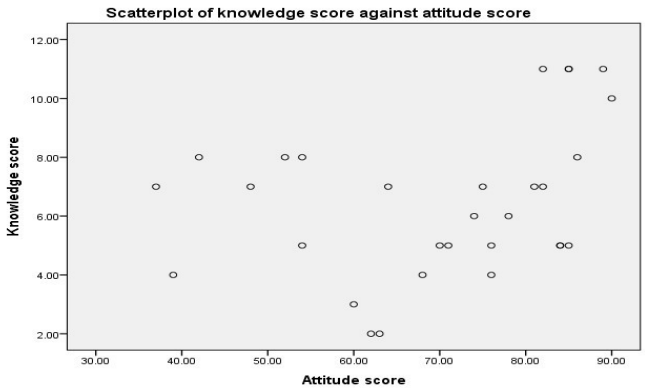
2.6 Testing the Hypotheses:

2.6.1 Hypotheses 1:

- H1: There will be a significant positive correlation between the postgraduate students' knowledge of using ELE and their attitudes toward it.

- H01: There will be no significant positive correlation between postgraduate students' knowledge of using ELE and their attitudes toward it.

- The relationship between knowledge and attitude was explored by a scatterplot of knowledge score against attitude score, as presented in Graph 2.



Graph 2: Knowledge score against attitude score.

Graph 2 shows some slight tendency for a high attitude score to go with a high knowledge score, indicating a positive correlation. The value of Pearson's correlation coefficient was computed as presented in Table 3.2. A one-tailed test was used because the direction of the correlation had been predicted.

Table 3.2: Correlation between knowledge and attitude.

Correlations		Knowledge Scores	Attitude scores
Knowledge Scores	Pearson Correlation	1	.319*
	Sig. (1-tailed)		.043
	N	3	30
Attitude scores	Pearson Correlation	.319*	1
	Sig. (1-tailed)	.043	
	N	30	30

- **Correlations is significant at the 0.05 level (1-tailed)**

Table 3.2 shows that the value of Pearson's r is .319. According to Hofer, et al. 2021 and Pallant (2020), a medium-sized correlation is one

with r=.30 to .49, which means that the knowledge score and the attitude score have a medium positive correlation. The one-tailed significance level is .043, less than .05, showing that the correlation is statistically significant. Therefore, H1 is accepted and the null hypothesis H01 is rejected (r=.319 {one-tailed}, n=30, *p*<.05).

2.6.2 Hypotheses 2:

- H2: If students are distance learners, they will have a higher knowledge level of using ELE than campus students.

- H02: If students are distance learners, they will not have a higher knowledge level of using ELE than campus students.

- The mean knowledge scores for the campus students and distance students were computed as shown in Table 3.3.

Table 3.3: Mean knowledge scores by campus status.

Group Statistics	Status	N	Mean	Std. Deviation	Std. Error Mean
Knowledge Scores	Campus	21	5.381	1.82965	.39926
	Distance	10	8.6000	2.50333	.79162

Table 3.3 shows that the mean knowledge score of campus students was 5.38, in comparison with the mean knowledge score of distance students of 8.60. The distance students' score was greater than the campus students' score. To say whether this difference was due to chance or whether it was real difference, an independent samples *t*-test was carried out as shown in Table 3.4.

Table 3.4: Independent samples *t*-test for knowledge scores by campus status.

	Independent samples test	Levene's Test for Equality of Variances		t-test for Equality of means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Td. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Knowledge Scores	Equal variances assumed	3.511	.071	-4.062	29	.000	-3.21905	.79240	-4.83969	-1.59840
	Equal variances not assumed	-	-	-3.631	13.76	.003	-3.21905	.88661	5.12375	-1.31435

Levene's Test for Equality of Variances demonstrates that the variances of the knowledge scores of the two status groups are the same (*p*=.071), so equal variances can be assumed. The result of the *t*-test indicates that the significance of the difference between the means is .000. Since *p*<.05, the difference between the means is statistically significant. Therefore,

distance students have more knowledge of ELE than campus students (campus: *M*=5.38, *SD*=1.83; distance: *M*=8.60, *SD*=2.50; *t* (30)=-3.63, *p*<.05).

Hypothesis 2 is accepted, whereas null hypothesis 2 is rejected.

2.6.3 Hypotheses 3:

- H3: If students are distance learners, they will have a more positive attitude toward ELE than campus students.

- H03: If students are distance learners, they will not have a more positive attitude toward ELE than campus students.

- The mean attitude score for the campus and distance students was computed as shown in Table 3.5.

Table 3.5: Mean attitude scores by campus status.

Group Statistics	Status	N	Mean	Std. Deviation	Std. Error Mean
Attitude Scores	Campus	21	67.8095	16.25613	3.54738
	Distance	10	76.7000	14.40717	4.55595

The mean attitude score for the campus students was 67.8, while for the distance students it was 76.7. Thus, the distance students appeared to have a more positive attitude toward ELE than the campus students. In order to test the significance of the difference between these means, the researcher used an independent samples *t*-test.

Table 3.6: Independent samples *t*-test for attitude scores by campus status.

	Independent samples test	Levene's Test for Equality of Variances		t-test for Equality of means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Td. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Attitude Scores	Equal variances assumed	.107	.746	-1.473	29	.151	-8.89048	6.03430	-21.232	3.4510
	Equal variances not assumed	-	-	-1.540	19.925	.139	-8.89048	5.77413	-20.938	3.1570

In Table 3.6, the significance level of Levene's Test for Equality of Variances is .746, indicating that the variances of the attitude scores for the two status groups were not different, so equal variances could be assumed. The significance level of the *t*-test was .151. So, since *p*>.05, there is no significant difference between the means of the two groups. Because the slight difference between the two means was not statistically significant, we have to say that there was no difference in

attitude toward using ELE between the campus and distance students (campus: *M*=67.8, *SD*=16.25; distance: *M*=76.7, *SD*=14.40; *t* (30)=-1.54, *p*>.05). Thus, H3 is rejected, and the null hypothesis H03 is accepted.

2.6.4 Hypotheses 4:

- H4: If students are native English speakers, they will have a higher knowledge level of using ELE than non-native speakers.

- H04: If students are native English speakers, they will not have a higher knowledge level of using ELE than non-native speakers.

- In order to test the hypothesis, the mean knowledge scores were computed for the two language groups, as shown in Table 3.7.

Table 3.7: Mean knowledge scores by first language.

Group Statistics	Status	N	Mean	Std. Deviation	Std. Error Mean
knowledge Scores	English	8	8.1250	3.44083	1.21652
	other	23	5.8261	1.89862	.39589

Table 3.7 demonstrates that students with English as first language had a mean of 8.1 on their knowledge score and students with other first languages had a mean of 5.8. It appears that the students with English as a first language had a higher knowledge level than students with other first languages. To test the significance of the difference between these means, the researcher used an independent samples *t*-test.

Table 3.8: Independent samples *t*-test on knowledge scores by the first language.

	Independent samples test	Levene's Test for Equality of Variances		t-test for Equality of means						
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Td. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Knowledge Scores	Equal variances assumed	4.002	.055	2.368	29	.025	2.29891	.97067	.31367	4.28415
	Equal variances not assumed	-	-	1.797	8.531	.108	2.29891	1.27931	-.61954	5.21737

In Table 3.8, the significance level of Levene's Test is .055, showing that the variances of the knowledge score for two language groups were not different from each other, and so equal variances can be assumed. From this table, it is seen that *p*=.025, which is less than .05, indicating that the difference between the means is statistically significant, so students with English as a first language had more knowledge of ELE than students with other first languages (English: *M*=8.12, *SD*=3.44; other languages: *M*=5.82, *SD*=1.89; *t* (30)=1.79,

p<.05). This confirms that hypothesis H4 is accepted, while the null hypothesis H04 is rejected.

2.6.5 Hypotheses 5:

- H5: If students are native English speakers, they will have a more positive attitude toward using ELE than non-native speakers.

- H05: If students are native English speakers, they will not have a more positive attitude toward using ELE than non-native speakers.

The mean attitude scores for the two language groups were computed as shown in Table 3.9.

Table 3.9: Mean attitude scores by first language.

Group Statistics	Status	N	Mean	Std. Deviation	Std. Error Mean
Attitude Scores	English	8	68.125	21.71528	7.67751
	other	23	71.5652	14.00917	2.92111

Table 3.9 shows that, for students with English as their first language, M=68.1 and, for other first languages, M=71.5. This indicates that non-native speakers appear to have a more positive attitude than native speakers. A t-test was utilized to test the significance of the difference between these means.

Table 3.10: Independent samples t-test on attitude scores by the first language.

	Independent samples test	Levene's Test for Equality of Variances		t-test for Equality of means					
		F	Sig.	t	df	Sig.(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower / Upper
Attitude Scores	Equal variances assumed	5.964	.021	-.517	29	.609	-3.44022	6.65286	17.04685 / 10.16641
	Equal variances not assumed	-	-	-.419	9.113	.685	-3.44022	8.21444	-21.98764 / 15.1072

Equal variances cannot be assumed from Table 3.10, as the significance level of Levene's Test was .021, indicating different variances. Therefore, the significance level of the difference between the mean attitudes scores was .685, so the difference between the means was not statistically significant. Thus, both native speakers and non-native speakers had the same level of attitude toward ELE (English: M=68.12, SD=21.71; others: M=71.56, SD=14.00; t (30)=-.419, p>.05). Hypothesis H5 is rejected, and the null hypothesis H05 is accepted.

2.6.6. Hypotheses 6:

- H6: Postgraduate students' knowledge of using ELE will be predictable based on their attitudes toward using it, status, and first language.

- H06: Postgraduate students' knowledge of using ELE will not be predictable based on their attitude toward using it, status, and first language.

In order to test whether the three independent variables (attitude toward using ELE, status, and first language) can predict knowledge of ELE, a standardized multiple regression was used. Standardized multiple regression reveals how well the set of three independent variables taken together predicts the dependent variable (knowledge). In addition, it will reveal which one of the three independent variables is the best predictor of knowledge. In standardized multiple regression, all of the independent variables are entered simultaneously.

Many assumptions about the data must be met before doing multiple regression. Firstly, all the data sets must be normally distributed, and this was confirmed earlier. Secondly, multiple regression is sensitive to outliers. One outlier (case 23 attitude score) was deselected. To check for other outliers, the standardized residual plot was obtained as part of the multiple regression output and inspected for standardized residual values above 3.3 or less than -3.3; and no points were found lying outside these limits, which confirmed that there were no other outliers. The next assumption to be checked was multi-collinearity, which would exist if the independent variables were highly correlated (r=.9 or above). In the output table called correlations, it was checked that the independent variables showed some relationship with the dependent variables. These correlations were all found to be greater than .3. Moreover, the correlations between the independent variables were all smaller than .7. Furthermore, in the coefficients table in the output, under collinearity statistics, the values of tolerance were greater than .1 and the values of VIF were smaller than 10. These pieces of information indicate that, while the independent variables were all related to the dependent variables, they were not too closely related. Thus, multi-collinearity was not present. Therefore, these three important assumptions of multiple regressions have been met.

Table 3.11: Correlations between variables in multiple regression.

Correlations		Knowledge Score	Attitude Score	Status	Language
Pearson Correlation	Knowledge Score	1.000	.319	.597	-.396
	Attitude Score	.319	1.000	.315	.068
	Status	.597	.315	1.000	-.373
	Language	-.396	.068	-.373	1.000
Sig. (1-tailed)	Knowledge Score	-	.043	.000	.015
	Attitude Score	.043	-	.045	.360
	Status	.000	.045	-	.021
	Language	.015	.360	.021	-
N	Knowledge Score	30	30	30	30
	Attitude Score	30	30	30	30
	Status	30	30	30	30
	Language	30	30	30	30

In order to assess how good the model is, it is necessary to inspect the model summary table and ANOVA table.

Table 3.12: Model summary of multiple regression.

Model Summary[b]						Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	Df1	df2	Sig. F Change
1	.652[a]	.424	.358	2.05867	.424	6.392	3	26	.002

a. Predictors: (Constant), Language, Attitude Score, Status.

b. Dependent Variable: Knowledge Score.

The model summary table shows that the value of the adjusted R square is .358, indicating that the model as a whole explains 35.8% of the variance in the knowledge variable. Adjusted R square was used because of the small size of the sample. To test whether the model as a whole is statistically significant, the ANOVA test was used.

Table 3.13: ANOVA for multiple regression.

(ANOVA[a])	Model	Sum of Squares	df	Mean Square	F	Sig.
1	Regression	81.276	3	27.092	6.392	.002[b]
	Residual	110.191	26	4.238		
	Total	191.467	29			

a. Dependent Variable: Knowledge Score.

b. Predictors: (constant), Language, Attitude score, Status.

The ANOVA table shows that the significance level is .002, indicating that the model as a whole is statistically significant. This shows that the model is a useful one with attitude, status, and language, explaining just over one-third of the knowledge score.

Table 3.14: Coefficients in multiple regression.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Lower Bound	Upper Bound	Zero-Order	Partial	Part	Tolerance	VIF
Constant	3.445	2.536	-	1.359	.186	-1.767	8.657	-	-	-	-	-
Attitude Score	.32	.026	.195	1.224	.232	-.022	.086	.319	.233	.182	.861	1.162
Status	2.383	.924	.445	2.578	.016	.483	4.282	.597	.451	.384	.745	1.343
Language	-1.39	.937	-.243	-1.484	.150	-3.317	.536	-.596	-.279	-.221	.823	1.216

Dependent Variable: Knowledge Score

Table 3.14 indicates the independent effect of the three independent variables on the dependent variable (knowledge score). Looking at the values of the standardized coefficient (beta values) and their levels of statistical significance, attitude score had a beta value of .196, with *p*=.232, status had a beta of .445, with *p*=.016, and language had a beta of -.243, with *p*=.150. This shows that only status had a statistically significant effect on knowledge score in its own right when the effects of attitude score and language were removed. Although in H1 there was a statistically significant positive correlation between the attitude score and knowledge score, this table shows that this correlation is no longer statistically significant when status and language are controlled for. The beta value for language is negative because other first languages are coded high (2) and English is coded low (1) and, as was found in H4, those with other languages had lower knowledge of ELE. Again, the effect of language on knowledge is no longer statistically significant when status and attitude are controlled for. Overall, hypothesis H6 is accepted, and hypothesis H06 is rejected.

Discussion:

H1: The positive correlation between knowledge and attitude could be because attitude could be seen as a cause of knowledge. People with a positive attitude toward ELE would tend to gain more knowledge if they like to use ELE. They are likely to spend more time using ELE, and this will help them learn more about it, so a positive attitude is likely to lead to increased knowledge. This result is consistent with the findings of Fauzi & Hashim (2020), Fauzi & Hashim (2020),

Adewole-Odeshi (2014), and Bakeer (2018), who argued that students with a positive attitude toward using the e-learning environment are likely to reinforce their effectiveness and productivity in courses. However, people with a negative attitude would spend less time using it and learn less (they may find face-to-face learning easier than ELE). In this case, a negative attitude will lead to a lower level of knowledge. The opposite process could also occur in that knowledge could be the cause of attitude.

H2: Distance learners had a higher knowledge level of ELE than campus students. This could be because campus students had deliberately chosen not to learn by distance learning because of their low level of ICT skills, whereas distance-learning students could have chosen this method of learning because of their high level of computer literacy. This agrees with Li and Lee (2016) and Putro, et al., 2023, who found that distance students reported higher computer skills than campus students, which might relate to their familiarity with computers and their applicability of computer facilities. It's possible that pupils spend more time using ICTs, resulting in a higher degree of computer literacy.

Furthermore, it is possible that distance students were unable to become campus students due to financial or family constraints, therefore they decided to increase their knowledge of ELE in order to enroll in this course. According to Al-Fraihat, et. al., (2017) and Tibi and Tibi (2015), using ICT for learning supports distance students to overcome issues such as geographic difficulties. Conversely, campus students may have decided that their computer skills were inadequate for distance learning and that they preferred to learn through face-to-face interaction with other people.

H03: It was surprising that no significant difference in attitude was found between campus and distance learners as I would have expected that distance learners would have a more positive attitude for the reasons outlined in the previous paragraph. Nevertheless, distance learners had a higher mean attitude score than campus students, but the difference was not statistically significant. This could be due to the small sample size (n=31), and with a larger sample, the difference between these means might have been statistically significant.

The above findings are consistent with those of Keskin, et. al. (2023); Nikou & Maslo (2023), who concluded that students' satisfaction with e-learning outcomes can be utilized as one of the primary markers of educational quality in higher education institutions. It is possible to hypothesize that a higher level of happiness

is related to a higher likelihood of success in the learning process, which translates to better academic performance (Asad, et. al., 2021).

H04: English speakers had a higher level of knowledge of ELE than did students with other first languages. This could be because ELE was provided by the UK University in English, so the former found it easier to understand, which agrees with the findings of Fauzi & Hashim (2020) and Eom, (2023), who explored that students who study in a non-native language are not ready to understand the course applied through e-learning environment. Or it could be due to the background of the students with other first languages in other countries, where they may have had less ICT education in school or university. This finding is similar to that of Daftari & Tavil (2017) who found that distance students who were non-native speakers had less confidence in their English whether spoken or written than English students.

H05: As for status, there was no difference in attitude scores between the two language groups. This indicates that the students with other languages were just as keen to use ELE as were the students with English as a first language, but in view of the lower knowledge score of the former group, this reinforces the idea that they had a lack of previous opportunity to learn, rather than a lack of interest.

Numerous studies have demonstrated that the effective use of e-learning can increase student engagement, motivation, and attendance. It should also increase class participation, behavior, and performance in fundamental subjects (de Melo Pereira, et al., 2015; Joo, et al., 2018). Self-motivation is an essential factor for students' success in the learning process. The integration of information and communication technologies into the learning process is contingent on the personal motivation of the participants. To enable students to maximize the ICT potential in their learning process, students' digitally enhanced learning must be supported (Paul, & Jefferson, 2019; Ramadan, et al., 2019).

H6: The multiple regression brought together all the previous variables (knowledge, attitude, status, and language) to elucidate the relationship among them. It showed that all three variables were predictors of knowledge, but, individually, it was status that explained that part of knowledge that was related in the previous hypotheses to attitude and language. Being campus or distance students was the main factor in determining the level of knowledge of ELE, rather than the first language. Looking further into this, cross tabs (see Appendix F) show that the majority of students with English as a first language were distance learners, whereas the majority of the other language students

were campus-based. Thus, the apparent relationships between language and knowledge in H4 can now be attributed to the difference in the status of the two language groups. It was not because of English that they had a higher level of knowledge, but because they were distance learners.

Conclusion:

E-Learning Education systems are receiving attention on a daily basis due to the inclusive pertinence they have in the education system that encompasses online learning. The purpose of this study was to determine the level of familiarity and attitude that postgraduate students have regarding the utilization of electronic learning environments (ELE). The study also studied the association between students' status (on campus or at a distance) and their knowledge of and attitude toward using ELE. Additionally, the study investigated the relationship between the student's first language and their knowledge of and attitude toward using ELE. According to the findings, a student's status, language, and level of knowledge all have an impact on their attitude toward using ELE, whereas only their level of status and language have an impact on their level of knowledge on utilizing ELE. Additionally, when both language and attitude were regulated, the only factor that affected knowledge was status. Students who were taking the course online were required to have a greater understanding of how to use ELE than those who were learning on campus since it was necessary in order to follow the course. On the other hand, students who were learning on campus did not require it as much because they spent the majority of their time on campus. Regardless matter how they felt about electronic learning environments, students who attended classes online were required to use ELE. It is necessary for the university to provide distant learners with access to online training courses in order for them to be proficient in the use of electronic learning environments (ELE).

The results of this study matter because they have major theoretical and practical consequences for educational policymakers and decision-makers. Finally, educational institutions should prioritize blended learning system development. If students believe their learning output has improved, they will be more likely to adopt e-learning and distant learning technology. We advocate creating reliable online digital portals where professors may educate without restrictions and students can benefit.

According to the findings, researchers should encourage interdisciplinary collaboration among specialists in future studies, skill development, e-learning, and AI to boost innovation and improve knowledge in this field. Furthermore, researchers should work with practitioners in distance education to ensure that their study is relevant and usable in real-world contexts. In future research, researchers should examine how e-learning affects learners' skills development and identify its success or failure aspects. Explore emerging e-learning trends like gamification, micro-learning, and mobile learning to see if they can improve skills development. Researchers should also investigate how AI may be integrated into e-learning to improve learners' experiences and skills development and identify barriers to e-learning adoption and propose strategies to overcome them. Finally, future research should conduct longitudinal studies to track the long-term impact of e-learning on learners' skills development and identify any potential drawbacks or limitations.

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دراسة استقصائية حول معارف طلاب الدراسات العليا واتجاهاتهم المتعلقة باستخدام بيئة التعلم المتحدة الإلكتروني في جامعات المملكة

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المستخلص: في العقود الأخيرة، لعبت تكنولوجيا المعلومات والاتصالات (ICT) دورًا حيويًا في تطوير عملية التعلم في التعليم العالي. حيث تشير الدراسات إلى أن تكنولوجيا المعلومات والاتصالات تمنح المعلمين والطلاب فرصة للتعلم وفقًا لأسلوب التعلم الذي يختارونه. ومع ذلك، فإن معرفتهم باستخدام هذه التكنولوجيا ومواقفهم تجاهها قد تؤثر على كفاءتها. بحثت الدراسة الحالية معارف الطلاب عند استخدام بيئة التعلم الإلكتروني (ELE) وموقفهم تجاهها كجزء من مقرر الدراسات العليا في جامعة المملكة المتحدة. تعتمد الدراسة الحالية البحث الكمي لاختبار الفرضيات التي تبنتها. وبالتالي ، تم جمع البيانات من ٣١ مشاركًا من خلال استبيان مغلق. كما تم استخدام معامل ارتباط بيرسون، واختبار t للعينات المستقلة ، والانحدار المتعدد لاختبار الفرضيات والتحقق في العلاقة بين معارف واتجاهات طلاب الدراسات العليا عند استخدام ELE، وكذلك دراسة العلاقة بين حالة تعلم الطلاب (بالحرم الجامعي أو عن بعد) ، ولغتهم الأولى (الإنجليزية أو غيرها)، ومعرفتهم/ مواقفهم تجاه استخدام .ELE . كانت النتائج الرئيسية أن المتعلمين عن بُعد لديهم معارف أعلى باستخدام ELE من المتعلمين في الحرم الجامعي، وأن الطلاب الذين يتحدثون الإنجليزية كلغة أولى لديهم معارف أعلى تتعلق باستخدام ELE من الطلاب الذين يتحدثون لغات أولى أخرى. بينما لم يكن هناك اختلاف في الاتجاهات بينهم. كما تم التوصل إلى أنه يمكن التنبؤ خلال مستوى المعارف من خلال معرفة درجات الاتجاهات وحالة الحرم الجامعي واللغة الأولى، ولكن حالة الحرم الجامعي فقط لها تأثير مستقل كبير على درجة المعارف.

الكلمات الدالة:

بيئة التعلم الإلكتروني (ELE) ، طلاب الدراسات العليا، المعارف، الإتجاهات، جامعات المملكة المتحدة.