

Bridging the Digital Divide: The Connection Between Perception of Acceptance of Technology in Learning and Behavioral Intentions of Universiti Kebangsaan Malaysia Students
(Merapatkan Jurang Digital: Hubungan Antara Persepsi Penerimaan Teknologi Dalam Pembelajaran dan Niat Tingkah Laku Pelajar Universiti Kebangsaan Malaysia)

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ABSTRACT

University students' diverse degrees of acceptance and behavioral intents towards the use of technology in their academic endeavors present a major problem despite the expanding availability and potential advantages of educational technology. Students at Universiti Kebangsaan Malaysia are surveyed to determine their attitudes about and intentions regarding the use of technology in their educational pursuits. A total of 150 students answered a questionnaire (Al-Hattami, 2023), and reliability analysis Cronbach's Alpha value is between 0.758 and 0.934. A z-score within ± 1.96 suggests that the data does not significantly deviate from normal distribution. The study reveals a high level of acceptance for technology in student learning. Gender differences in perception of technology acceptability in the learning environment are not significant ($p > 0.05$). A strong and statistically significant positive correlation ($r = .736$; $p < 0.05$) is seen between the perception of technology acceptance in learning with the intention of student behavior. Students who have a high perception of technology acceptance are more likely to use technology for learning and have a positive attitude toward its use. The study's findings are based on a specific university's students and might not be applicable universally. This objective may be accomplished by the provision of up-to-date technology and software, the provision of training and support for technology use, and the integration of technology into the curriculum in manners that enhance educational results. Future studies need to involve larger samples.

Keywords: Technology, learning, behavioral intentions, university, students

ABSTRAK

Tahap penerimaan dan niat tingkah laku pelajar universiti yang pelbagai terhadap penggunaan teknologi dalam usaha akademik mereka menimbulkan masalah utama walaupun ketersediaan yang semakin meluas dan potensi kelebihan teknologi pendidikan. Pelajar di Universiti Kebangsaan Malaysia dikaji untuk menentukan sikap dan niat mereka terhadap penggunaan teknologi dalam pendidikan mereka. Seramai 150 pelajar menjawab soal selidik (Al-Hattami, 2023), dan analisis kebolehpercayaan Nilai Alpha Cronbach adalah antara 0.758 dan 0.934. Skor z diantara ± 1.96 menunjukkan bahawa data tidak menyimpang dengan ketara daripada taburan normal. Kajian data mendedahkan tahap tanggapan yang tinggi terhadap penerimaan teknologi dalam pembelajaran pelajar. Perbezaan jantina dalam persepsi kebolehterimaan teknologi dalam persekitaran pembelajaran adalah tidak signifikan ($p > 0.05$). Kolerasi positif yang kukuh dan signifikan secara statistik ($r = .736$; $p < 0.05$) dilihat antara persepsi penerimaan teknologi dalam pembelajaran dengan niat tingkah laku pelajar. Pelajar yang mempunyai persepsi yang tinggi terhadap penerimaan teknologi lebih cenderung menggunakan teknologi untuk pembelajaran dan mempunyai sikap yang positif terhadap penggunaannya. Penemuan kajian adalah berdasarkan pelajar universiti tertentu dan mungkin tidak boleh digunakan secara universal. Objektif ini boleh dicapai dengan penyediaan teknologi dan perisian terkini, penyediaan latihan dan sokongan untuk penggunaan teknologi, dan penyepaduan teknologi ke dalam kurikulum dengan cara yang meningkatkan hasil pendidikan. Kajian masa depan perlu melibatkan sampel yang lebih besar.

Kata kunci: Teknologi, pembelajaran, niat tingkah laku, universiti, pelajar

INTRODUCTION

University learning and the use of technology have become closely intertwined in today's educational landscape. Technology has revolutionized the way universities deliver education, interact with students, and facilitate the learning experience (Kassim & Ahmad., 2010). Acceptance of technology in learning refers to the extent to which students accept and utilize technology for educational purposes (Aziz et al., 2020). It consists of their intentions, beliefs, attitudes, and behaviors concerning the adoption and utilization of technology as a learning and knowledge acquisition instrument. Educational institutions, policymakers, and educators must all have a comprehensive understanding of the implementation of technology in the classroom.

Education stakeholders may facilitate the integration and proficient use of technology in the learning process by considering many aspects that impact technology acceptance. These elements include perceived usefulness, simplicity of use, attitudes, and social support (Umbit & Taat, 2016). This in turn can increase student engagement, motivation, and learning outcomes in today's digitally driven education landscape. Through the revolutionary era of Industry 4.0, students live in a borderless world that offers unlimited lines, data, and mobility. This situation means that they want an education system that meets the needs of individuals, and allows them to connect with the outside world.

Social media is described as a set of web-based applications based on the principles and infrastructure of Web 2.0 that facilitate the creation and distribution of user-generated content, as established by research done by (Kaplan and Haenlein, 2010). Research conducted by (Beer, 2008) indicates that Facebook is the most widely used social networking site among local students and residents. Teachers and students may benefit from Facebook's open and inviting environment in the classroom. According to (Rader & Wilhelm, 2001), students may more easily access the relevant materials using E-learning. (Littlejohn and Higgison, 2003) assert that the implementation of video streaming in the educational setting offers numerous advantages and benefits, as it fosters interactive engagement and collaboration between instructors and learners, as well as active participation and collaboration.

(Weiser, 2002) posits that the pedagogical process may be enhanced by using the use of screens to convey instructional information in a manner that is both lucid and engaging. (Richardson, 2010) posits that the use of online web-based teaching and learning approaches might enhance students' receptiveness and

proficiency in acquiring information literacy abilities via internet usage. (Sharples, 2000) asserts that the use of M-Learning media technology facilitates the real-time connection between educators and learners, either in a physical or virtual setting, hence enhancing the educational experience and promoting lifelong learning.

(Tan and Abu, 2013) said that the YouTube social site is no longer just used for personal, and commercial videos and so on but is used as one of the teaching and learning mediums while according to (Embi, 2011), YouTube can be connected to other web applications such as blogs, wikis, etc. indirectly imply the effectiveness of learning with fast access to information. According to (Duffy, 2008), YouTube's instructional content is a valuable resource for educators and students alike. One way to boost the standard of education in the nation is to make better use of media technologies like YouTube, which may foster a more imaginative and enjoyable learning environment.

(Kim et al., 2021) found that perceived ease of use affects perceived usefulness, perceived usefulness affects attitude, whereas perceived ease of use does not directly affect attitude. Second, attitude and subjective norms positively influence behavioral intention, while perceived behavioral control does not. Third, user innovativeness plays a moderating role in the relationship between subjective norms and behavioral intention.

The investigation conducted by (Unal and Uzun, 2021) on understanding university students' behavioral intention to use Edmodo revealed a strong prediction of intention based on its antecedents. To be more precise, attitude was the primary determinant, whereas perceived utility had a small influence on predicting intention. The perceived ease of use had a direct impact on the perceived usefulness, and it also had an indirect affect on intention via attitude. All external factors that influenced the perception of utility and convenience of use were found to be statistically significant.

According to (Kim et al., 2021) research on understanding student acceptance of online learning systems in higher education, perceived ease of use impacts perceived usefulness, and perceived usefulness influences attitude, but perceived ease of use does not directly affect attitude. Second, perceived behavioral control has little effect on behavioral intention, attitude, and subjective standards. Third, in the link between subjective norms and behavioral intention, user innovativeness acts as a moderator.

According to (Humida et al., 2022), 'perceived usefulness' and 'considered ease of use' are favorably

and substantially impacted by 'reported pleasure'. Furthermore, 'perceived utility,' 'perceived ease of use,' and 'facilitating condition' all have a substantial influence on behavioral intention to utilize e-learning. According to the findings of the mediation study, 'perceived usefulness' and 'perceived ease of use' have mediating effects between the predictors and the outcome. Finally, the 'facilitating condition' has a significant moderating influence in predicting the

student's behavioral intention in utilizing e-learning.

This chance is a motivating factor in the effort to bring cutting-edge technology into the classroom. The technology boom allows learning to be transformed into more active learning in line with the active learning framework of Universiti Kebangsaan Malaysia (refer to Figure 1) and further prepares graduates for future employment.

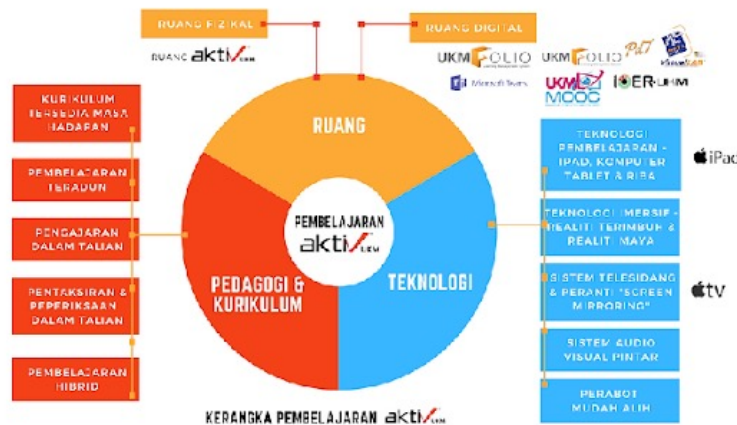


FIGURE 1. UKM Active Learning Framework (<https://www.aktivukm.my/>)

Despite the availability of technological resources and the potential benefits they offer, many students exhibit scepticism or resistance to using technology for educational purposes (Umbit & Taat, 2016). Students' low adoption and use of technology for educational purposes is a major challenge. The term "barriers to the adoption of technology in learning" is used to describe the problems that arise while trying to use and utilize technology in a classroom setting. These barriers can hinder student acceptance, acceptance, and effective use of technology for learning purposes. Complex or unfamiliar technology can overwhelm students, especially those with lower digital literacy skills. If technologies are difficult to understand, navigate, or operate, students may feel discouraged and may not fully engage with them.

Some students and even lecturers may reject technology integration because of a preference for traditional teaching methods or fear of technology replacing human interaction. A lack of openness to change may stymie efforts to integrate technology into the classroom. Some students may doubt that technology helps them learn or that it is even relevant to their curriculum. If they do not see a clear connection between the technology and better learning outcomes

or understanding of the subject, they may be less motivated to accept and use it. In light of this issue description, the study set out to investigate university students' attitudes about and intentions concerning using technological aids in the classroom.

There are three study objectives which are:

- i. To identify the degree to which students at Universiti Kebangsaan Malaysia accept the use of technology to help them learn.
- ii. To identify differences in the perception of technology acceptance in the learning of Universiti Kebangsaan Malaysia students based on gender.
- iii. Identify the connection between students at Universiti Kebangsaan Malaysia's behavioral intentions and their perceptions of the acceptability of technology in the classroom.

Figure 2 shows that this study involves an independent variable which is the Perception of Acceptance of Technology in Learning which contains five dimensions namely usefulness, ease of use, social influence, self-efficiency, and attitude towards use. This study also has a dependent variable which is behavioral intention.

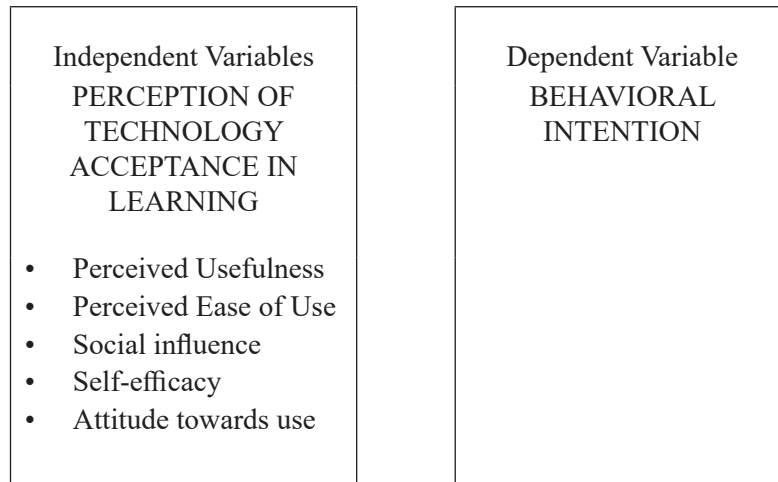


FIGURE 2: Study Framework

METHODOLOGY

This study is a study using a quantitative approach that uses survey methods. The study's population comprises pre-graduate pupils enrolled at the National University of Malaysia, Bangi. A total of 150 participants provided their feedback. The research instrument is in the form of a questionnaire adapted from Al-Hattami's study

(2023). There are three parts to the questionnaire: A is for demographics, B is for perception of acceptance of technology in Learning, and C is for behavioral intentions. The five (5) Likert scale method was used as an answer choice from the respondents of this study.

When this measure is divided into three levels, the following figures become indicators of the level of perception:

TABLE 1. Perception Level Indicator

Score	Perception Level Indicator
1.00-2.33	Low
2.34-3.67	Intermediate
3.68-5.00	High

This research instrument contains 17 items which are divided as below:

TABLE 2. Instrument Items and Dimensions

Variable	Dimension	No. Item
Perception of technology acceptance in learning	Perceived Usefulness	3
	Perceived Ease of Use	3
	Social influence	2
	Self-efficacy	3
	Attitude towards use	3
Behavioral intention		3

The questionnaire was sent out to participants using the messaging service WhatsApp and distributed using a Google Form. A sample of UKM students was randomly selected to participate in the recruitment process. Respondents voluntarily participated without financial compensation because they wanted to have a positive impact on scientific understanding. The data was analysed using the SPSS 25.0 program, which is a Statistical Package for the Social Sciences. The implemented statistics include descriptive analysis as

well as inferential analysis, including the T-test and correlation test.

DATA ANALYSIS

Demographic

Based on Table 3, it was found that 36 people were male and 114 people were female out of 150 respondents.

TABLE 3. Descriptive Analysis

		Frequency	%	Percent valid	Cumulative percentage
Valid	Male	36	24.0	24.0	24.0
	Female	114	76.0	76.0	100.0
	Total	150	100.0	100.0	

Based on Table 4 below, Cronbach's Alpha value is between 0.76 and 0.93. According to Nunally (1978) and (Hair et.al, (2013) the acceptable interpretation of the reliability coefficient is that $\alpha \geq .60$ is sufficient for

exploratory studies. It may be assumed from this that the researcher's questions are credible and understandable to the respondents.

TABLE 4. Reliability Analysis

	Use	Easy	Social	Efficient
α	.88	.85	.78	.76
	Attitude	Intention	Technology	
α	.83	.90	.93	

Based on Table 5, the value of Skewness is between 0.98 and -0.82. Since all data were normal,

parametric tests were performed.

TABLE 5. Normality Analysis

	Use	Easy	Social	Efficient
Skewness	-.54	-.74	-.99	-1.00
Std. Error of Skewness	.19	.19	.19	.19
Kurtosis	-.82	.05	.98	.94
Std. Error of Kurtosis	.39	.39	.39	.39
	Attitude	Intention	Technology	
Skewness	-.50	-.95	-.68	-.50
Std. Error of Skewness	.19	.19	.19	.19
Kurtosis	-.72	.29	-.13	-.72
Std. Error of Kurtosis	.39	.39	.39	.39

The degree to which students at Universiti Kebangsaan Malaysia accept the use of technology to help them learn.

Based on Table 6 below, it was found that all variables and dimensions are above the value of 4.2. This shows that all of them are at a high level.

TABLE 6. Level acceptance of the use of technology

	Use	Easy	Social	Efficient
N Valid	150	150	150	150
Missing	0	0	0	0
Mean	4.42	4.21	4.35	4.4
Std. Deviation	.58	.72	.64	.61
Level	High	High	High	High

	Attitude	Intention	Technology
N Valid	150	150	150
Missing	0	0	0
Mean	4.44	4.44	4.35
Std. Deviation	.56	.62	.51
Level	High	High	High

Differences in the perception of technology acceptance in the learning of Universiti Kebangsaan Malaysia students based on gender.

According to the data shown in Table 7, it can be seen that the average score obtained by males (4.31) is comparatively lower than that of females (4.37).

TABLE 7. Group Statistics Based on Gender

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Technology	Male	36	4.31	.51	.09
	Female	114	4.37	.52	.05

Based on Table 8, the study revealed that the t-value for the examination of the disparity in technology acceptance perception between male and female students in the context of learning is $t = -.59$, with a corresponding significant level of $p = .56$. The observed p-value is larger than the predetermined significance threshold of 0.05. There is a lack of substantial disparity seen in the impression of technology acceptability between male and female students in the context of learning.

The connection between students at Universiti Kebangsaan Malaysia's behavioral intentions and their perceptions of the acceptability of technology in the classroom.

After conducting a correlation analysis, the findings in Table 9 show that there is a very strong positive relationship $r = .74$; $p < .05$ and significance between the perception of technology acceptance in learning and behavioral intention. This means that the perception of

TABLE 8. T Test Analysis

		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
Technology	Equal variances assumed	.64	.42	-.59	148	.56	-.06	.09	-.25	.14	
	Equal variances not assumed			-.59	59.40	.56	-.06	.09	-.25	.14	

technology acceptance in learning score has a strong positive relationship with the behavioral intention score. This result implies that students who have a high perception of technology acceptance in learning are also likely to tend to have high behavioral intention. Therefore, a person's behavioral intention level can be

expected from his perception of technology acceptance at the learning level. suggests that further research could investigate the directionality of the relationship. This discovery implies that more studies might explore the causality of the association.

TABLE 9. Correlation Test Analysis

		Intention	Technology
Intention	Pearson Correlation	1	.74**
	Sig. (2-tailed)		.000
	N	150	150
Technology	Pearson Correlation	.74**	1
	Sig. (2-tailed)	t.000	
	N	150	150

** . Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

The degree to which students at Universiti Kebangsaan Malaysia accept the use of technology to help them learn.

Students at Universiti Kebangsaan Malaysia have a positive impression of the role that technology plays in education. The extent to which students think that technology is helpful, simple to implement, and improves their learning experience is a measure of how much they accept its usage in the classroom. A student's outlook on the usefulness of technology in

education may be impacted by their level of familiarity with the medium, their general disposition toward it, and their own experiences. Students who have a high perception of technology acceptance are more likely to use technology for learning and have a positive attitude toward its use. On the other hand, students who have a low level of perception of technology acceptance may hesitate to use technology or may not see the value of using it for learning.

Therefore, the university needs to promote a positive perception towards the acceptance of technology in learning among students. This can be

done through providing training and resources to help students become more comfortable using technology, as well as incorporating technology into the curriculum in meaningful ways that demonstrate its benefits for learning. The notion of perceived efficacy pertains to the extent to which individuals hold the belief that a particular technology or system will enhance their productivity or performance in the pursuit of a particular objective or undertaking (Davis, 1989). It significantly influences the adoption and utilization of technology. Several factors frequently influence perceived utility, including prior experience with comparable technologies by users, their comprehension of the prospective benefits and advantages presented by the technology, and the degree to which the technology corresponds with their requirements or desires.

Individuals are more likely to adopt and utilize technology when they perceive it to be beneficial. Individuals hold the conviction that the technology will simplify, optimize, or enhance their work processes, and they perceive merit in integrating it into their routine undertakings. Usability is a subjective evaluation of how simple it is to utilize a certain technology or system. It is a notion that is directly tied to perceived utility and is a key component in deciding technological adoption and utilization. When technology is seen as simple to use, people assume they can learn and utilize it without much work or trouble. The clarity of the user interface, the simplicity of the interaction design, the availability of user-friendly features, and the comprehensibility of system activities and procedures all impact perceived ease.

The extent to which a person believes that influential individuals think he or she should utilize the new system is known as social influence (Venkatesh et al., 2003). Most people believe that peer pressure is the single most important element in determining whether or not they will adopt a new piece of technology. Social influence in technology also refers to the effect of social variables on the attitudes, actions, and choices of persons relating to the adoption and use of technology. It acknowledges that individuals are impacted by the beliefs, actions, and standards of others in their social circles. The term "self-efficacy" refers to an individual's confidence in his or her capacity to do a certain computer-based activity or job effectively (Bodendorf, 2019).

The term "self-efficacy" refers to a student's perception of and belief in his capacity to use technological tools effectively in the classroom (Fathema et al., 2015). People who have high levels of self-efficacy with technology are confident in their abilities to utilize and complete activities using

that technology. Self-efficacy, first advocated by psychologist Albert Bandura, refers to an individual's confidence in his or her ability to accomplish a goal. An individual's overall judgment, perception, and emotional disposition toward the usage and application of technology is referred to as their attitude toward technology. It includes feelings, beliefs, and positive or negative opinions held by individuals about technology and its impact on their lives.

Attitudes are shaped by a variety of factors, including personal experiences, beliefs, values, social influences, and cultural norms. How people feel about and interact with technology greatly affect how they feel about and interact with technology. Positive attitudes are associated with higher intentions to use the technology, greater engagement, and continued use. Organizations and development often seek to understand and address user attitudes by emphasizing benefits, providing user-friendly design, offering training and support, and addressing concerns or barriers.

Differences in the perception of technology acceptance in the learning of Universiti Kebangsaan Malaysia students based on gender.

(Chen and Looi, 2007) state that prior research indicates that males and females see technology adoption in the classroom differently. In contrast to females, males are more inclined to see technology favorably and use it as a learning tool. These differences may be due to cultural and societal factors that influence gender roles and expectations. Another study conducted by researchers discovered that females had a higher tendency to view technology as more challenging to use and less advantageous compared to their male counterparts. Women also reported lower levels of confidence in their ability to use technology and were less likely to seek help when faced with technology problems. These variables may contribute to females' lower levels of technology acceptability and behavioral intention to utilize technology in learning.

The finding is contrary to this study which found that there was no difference in Perception of Acceptance of Technology in Learning by Universiti Kebangsaan Malaysia Students Based on Gender. To overcome any gender disparities, it is critical to give men and women training and assistance to boost their confidence and proficiency in utilizing technology. Additionally, designing technology that is user-friendly and perceived as useful for both genders can help promote technology acceptance and increase behavioral intentions toward using technology in learning.

The progressive use of technology in

education, together with ongoing technical progress, might potentially foster a favorable change in students' attitudes. Continuous exposure to cutting-edge instruments may lead to improved confidence and acceptance among pupils. The observed alterations underscore the significance of educational institutions modifying their methodologies to conform with advancing technology patterns. Faculty development initiatives, updates to the curriculum, and the incorporation of new technologies may foster favorable shifts in students' adoption of technology. It is crucial to take into account the cultural and sociological aspects that impact the way people perceive technology as time goes on. Shifts in social views towards technology, economic changes, and world events may all influence how pupils perceive and use technology for educational purposes.

The connection between students at Universiti Kebangsaan Malaysia's behavioral intentions and their perceptions of the acceptability of technology in the classroom.

Consistent with other research (Chen & Looi, 2007), this study found a favorable correlation between how people feel about technology's acceptability and their plans to use it. People are more inclined to adopt new technologies if they find them practical and intuitive. On the other hand, people are less inclined to adopt new technologies if they see them as complicated or pointless. The term "technology acceptance" is used to describe how many people think a certain piece of technology is practical and simple to use. A person's behavioral intention is the degree to which they anticipate making future use of a certain technological feature. Several variables might impact the impression of technology acceptability among students at Universiti Kebangsaan Malaysia.

The factors included in this category are the perceived utility of technology, the perceived simplicity of its use, the perceived alignment with current systems and practices, and the perceived impact of social influence from others. In addition, previous studies also show that individual characteristics such as age, gender, and previous experience with technology can also influence the perception of technology acceptance. To promote technology acceptance and increase behavioral intentions towards using technology in learning, it is important to address these design factors and technologies that are considered useful, easy to use, compatible with existing systems and practices, and socially acceptable. Additionally, providing training and support for individuals who may be less familiar

with technology can also help increase perceived acceptance of technology and encourage behavioral intentions toward using technology in learning.

CONCLUSION

Students who have a high perception of technology acceptance are more likely to use technology for learning and have a positive attitude toward its use. Technology has become an essential component of the student experience in modern higher education, revolutionizing the methods of acquiring, sharing, and applying information. Universities globally are seeing a significant increase in the use of diverse technologies, motivated by a shared acknowledgment of their capacity to enhance the educational setting. The Learning Management System (LMS) is widely used by university students. Platforms like UKMFolio, Google Classroom, and Canvas have emerged as primary centers for course content, announcements, conversations, and evaluations. The Learning Management System (LMS) not only offers a centralized and structured platform for academic materials but also enables smooth and efficient communication between students and teachers.

The acceptability of this technology is based on its capacity to optimize the learning process and improve the availability of educational materials. Collaborative solutions like as Google Meet and Zoom have been widely embraced. These technologies surpass geographical limitations, allowing students to work together on projects, exchange papers, and participate in live conversations. The cooperative characteristics of these technologies correspond with the developing educational focus on cooperation and communal resolution of problems, equipping students for collaborative pursuits in the professional realm.

The emergence of digital textbooks and e-books signifies a fundamental change in the manner in which students get academic materials. In addition to the ease of having a complete library on a digital device, e-books often have interactive features, multimedia elements, and search capabilities that improve the learning process. Their acceptability is based on their capacity to be easily carried, their cost efficiency, and their ecologically friendly nature as a substitute for conventional printed materials.

University students are increasingly favoring video lectures and instructional information available on sites such as YouTube and TED-Ed. These platforms provide a wide range of instructional information, including subject-specific courses and thought-provoking debates. Video-based learning

accommodates many learning styles by incorporating visual and audio elements into conventional text-based training. Cloud computing services, such as Dropbox, Google Drive, and OneDrive, have become essential for collaborative projects and effortless document sharing. These services not only improve the availability of materials but also encourage effective cooperation among students, enabling a digital environment where data may be shared and modified simultaneously.

It is essential for future educational initiatives to give priority to the meaningful and transdisciplinary integration of technology into the curriculum. Transition from conventional lecture-oriented approaches to project-based and experiential learning methods. Engaging in hands-on projects, internships, and industry partnerships enables students to get practical experience, enhancing their comprehension of how technology functions in real-world situations. Integrate cutting-edge technology like artificial intelligence, virtual reality, and blockchain into the curriculum.

These technologies are not just instruments for the future but also essential elements of our current time, and students must possess a high level of proficiency in using them. Acknowledge the significance of interpersonal skills in conjunction with technical expertise. Proficiency in communication, teamwork, flexibility, and critical thinking are essential abilities that enhance technical competence, resulting in persons who are well-prepared to tackle a wide range of professional difficulties.

Future studies need to involve larger samples. The generalizability of the findings may have been affected by sampling bias if the participants were not a representative sample of the overall university student population. Moreover, the dependence on self-reported data for assessing the acceptability and attitudes towards technology may lead to the presence of social desirability bias, which might distort the findings.

The use of a cross-sectional design in the research presents constraints in demonstrating causality. Longitudinal studies are necessary to have a more comprehensive picture of the temporal dynamics of technology adoption and attitudes. In addition, the research may have failed to sufficiently account for contextual variables, such as diverse technology infrastructures and institutional regulations in various university environments.

To overcome these constraints, future studies might use longitudinal methodologies to monitor the evolution of technological acceptability over some time. Conducting comparative assessments across various colleges or educational systems would provide valuable insights into the influence of institutional variations

on students' perspectives. Qualitative research might enhance quantitative results by investigating the fundamental motivations behind students' opinions, while thorough contextual studies would provide insight into the influence of institutional policies and technology infrastructures.

An investigation of the influence of cultural and socioeconomic aspects on technology adoption might provide a more comprehensive understanding of the varied experiences of students. Furthermore, treatments and instructional initiatives focused on improving technology adoption might be created, executed, and assessed. Conducting a comparative analysis of technology adoption across different academic fields and examining the influence of technological training on students' perceptions and attitudes might enhance our knowledge of this intricate connection.

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