International Journal for Research in Educational Studies
(ISSN: 2208-2115)
Vol. 12, Iss. 01, 2026
DOI: 10.65327/es.v12i1.2530

TECHNOLOGY INTEGRATION IN CLASSROOMS: STUDENT ADAPTABILITY, DIGITAL ACCESS, AND FUTURE DIRECTIONS

Dr. Noura Al Hosani[1], Dr. Abdulla Al Hmoudi[2]

[1] College of Education, United Arab Emirates University, Al Ain, United Arab Emirates
[2]College of Education, Zayed University, Dubai, United Arab Emirates.
Email: abdulla.alhmoudi@zu.ac.ae

Received: 12/29/2025 Revised: 03/02/2026 Acceptance: 03/12/2026 Published: 03/23/2026

Abstract
Technology integration has become an important component of contemporary classroom teaching and learning. However, its effectiveness depends not only on the availability of digital tools but also on students' adaptability to technology-enabled learning environments. This study examined technology integration in classrooms through students' adaptability to online education, with attention to demographic, technological, institutional, socioeconomic, and learning-related factors. The study adopted a quantitative secondary-data research design. Data were drawn from the open-access Kaggle dataset, comprising 1,205 student-level observations and 14 variables. Descriptive statistics, cross-tabulations, chi-square tests of association, and Cramer's V were used to analyze patterns and relationships between selected variables and students' adaptivity level. The findings showed that 51.9% of students had moderate adaptability, 39.8% had low adaptability, and only 8.3% had high adaptability. Financial condition, class duration, institution type, and location showed the strongest associations with adaptivity level. Technology-related factors, including device type, internet type, network type, and institutional LMS access, were also significantly associated with adaptability. The study concludes that classroom technology integration is shaped by more than access to digital tools. Effective and inclusive integration requires attention to socioeconomic equity, stable infrastructure, institutional support, learner readiness, and meaningful pedagogical use. Future digital classrooms should prioritize accessibility, structured learning systems, and sustained support for students and teachers.

Keywords: technology integration; online education; student adaptability; digital learning equity

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1. Introduction

The use of technology in the classroom is now a characteristic aspect of modern day classroom practice. There is a growing number of digital devices, learning management systems, online platforms, multimedia tools, artificial intelligence apps, and data-driven learning environments to aid teaching, assessment, collaboration, and student engagement. The usefulness of technology in education is however not limited to its availability but its acceptance, implementation and correspondence with the objectives of pedagogy. The incorporation of technology should thus not be interpreted as mere use of gadgets in the classrooms. Instead, it means the intentional integration of digital tools into the teaching and learning experiences in a way that enhances access, participation, the quality of instruction, and learning outcomes.

Technology integration has a strong connection with technology acceptance and adoption as its theoretical framework. Davis (1989) contended that the key factors that determine the acceptance of technology among the users are the perceived usefulness and the perceived ease of use. This means that in schools, students and their instructors have a better chance of embracing digital tools when they are convinced that digital tools enhance efficiency of learning, communication, assessment and classroom interaction. On the same note, the Unified Theory of Acceptance and Use of Technology highlights that, performance expectancy, effort expectancy, social influence and facilitating conditions influence technology adoption behavior (Venkatesh et al., 2003). These viewpoints are significant in integrating technology in the classroom as they reveal that digital transformation is not entirely technical. It is also psychological, social, institutional and contextual.

In spite of the increased access to educational technologies, numerous classrooms still endure the longstanding obstacles. Ertmer (1999) differentiated between first order barriers, and second order barriers to technology integration. The external barriers, known as first-order barriers, are poor infrastructure, lack of access to the devices, bad internet access, poor technical assistance, and time. Second-order barriers consist of internal barriers like teacher beliefs, confidence, pedagogical assumptions, and resistance to change. Hew and Brush (2007) also found resource, knowledge and skills, institutional support, attitudes and beliefs and assessment structures barriers and subject culture barriers. These obstacles are very topical in the present-day discussions of digital education since the existence of technology does not ensure its practical application.

Another core aspect of meaningful technology integration is teacher knowledge. Mishra and Koehler (2006) put forward the Technological Pedagogical Content Knowledge framework, popularly referred to as TPACK, to illustrate the very intricate relationship involving the knowledge of technology by teachers, pedagogy, and subject content. This framework states that successful integration of technology can be achieved when teachers not only know how to use digital tools but also how they can be used to facilitate particular pedagogical practices and learning outcomes associated with particular subjects. Later, Koehler et al. (2013) highlighted that TPACK is not an independent body of technical knowledge, but rather an integrated type of professional knowledge that is necessary to teach with technology-rich teaching. The given framework can be applied to the current research due to its emphasis on the necessity to go beyond access and emphasis on the quality of technology-based learning.

There is international evidence on the use of classroom technology with mixed evidence. According to the OECD (2015), the availability of computers in schools does not necessarily result in better learning outcomes. In other situations, the unlimited or improperly directed use of technology can be even linked with poor academic results. This implies that educational technology should be incorporated by planning, preparation of the teachers and pedagogical coordination. Recent policy debates also focus on the notion that digital education ecosystems need aligned infrastructure, professional growth, governance, data systems, and general access (OECD, 2023). Likewise,

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UNESCO (2023) warned that technology in education must be considered with references to equity, inclusion, relevance, sustainability, and learning needs as opposed to technological novelty, by itself. It also demands a critical approach since technology is usually being taught as a panacea to the educational issues. As Selwyn (2021) indicated, the discussion of education and technology has to look at such issues of power, inequality, commercialization, surveillance, and social context. This opinion is significant as the digitalization of education may replicate or even aggravate the existing disparities in cases when students vary in terms of access to devices, the quality of the internet, financial means, digital competencies, and institutional assistance. Thus, the overall analysis of the classification of technology integration into classrooms should focus on both opportunities and constraints.

The impact of technology on student engagement and curricular practices has been the theme of recent scholarship, as well. Bond et al. (2020) demonstrated that the research on educational technology began to investigate the behavioral, emotional, and cognitive involvement. Lai and Bower (2019) have claimed that learning design, pedagogical purpose, learner experience, and educational outcomes should be considered when evaluating the use of technology in education. Fernandez-Sanchez et al. (2022) also noted the significance of digital technologies integration into the curriculum, and that technology must be integrated into curriculum development and planning and not considered an extra tool. Kimmons et al. (2020) also mentioned that the teacher preparation and technology integration model are significant in assisting teachers in creating effective digital pedagogies.

In that regard, student adaptability offers a valuable perspective on the efficacy of integrating technology into classrooms. The successful integration is not only determined by the availability of digital tools but also the adaptability of learners to adopt technology-based learning environments. Such flexibility is informed by various demographic, technological, institutional, and socioeconomic factors, such as access to devices, quality of the internet, financial status, duration of the class, institutional assistance of learning, and education level. Analysis of these factors assists in explaining why technology integration is successful in certain situations and gets limited in others. It also offers a foundation to comprehend the challenges, opportunities and future perspectives of digital transformation in classroom teaching and learning.

2. Methodology

2.1 Research Design

The research design embraced in the study was quantitative secondary-data research design, which aimed at investigating the integration of technology in classes using the adaptability of learners to online learning. The quantitative method was suitable since the data set has structured categorical variables that are related to the demographic background of the students, institutional context, access to technology, learning conditions, and the level of adaptability. As the research was not about a primary data gathering, the analysis was conducted solely on an existing open-access dataset. The secondary data facilitated the study to view the integration of technologies in classrooms in evidence based concept but put more emphasis on measurable elements that determine students ability to adjust to learning environments supported by technology.

2.2 Data Source

Data used in this work were collected as a publicly available set of data on Kaggle called Students Adaptability Level in Online Education (Mahmudul Hasan Suzan, 2021). The data contains student level data regarding adaptability to online education and contains variables that relate to access to digital tools, institutional support, learning environment, socioeconomic condition, and technological readiness. The dataset is appropriate to the current study since it has a number of

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dimensions that directly refer to matters that concern the classroom integration of technology such as the availability of the devices, the type of internet, the quality of the network, access to the learning management system, duration of the classes, the location of the classes, financial status, and even electricity related interference. These variables allow analyzing the challenges and opportunities related to technology-enabled learning.

2.3 Population and Sample

The sample size used in the data is a set of students undergoing online learning. The sample will consist of single responses of students in the Kaggle dataset. The researcher did not conduct any further sampling since secondary data was used as the present study. The study sample was considered to be the available dataset. The respondents were categorized under various demographic and educational groups with differences in terms of gender, age group, the level of education, type of institution and learning context. Such a variety enabled the study to investigate the adaptability to online education among students groups and under various conditions.

2.4 Variables of the Study

The study dependent variable was Adaptivity Level, that indicates the level of adaptability of students to online education. This was a variable that was taken as the primary outcome variable to study the preparedness and adaptation of students to technology-enabled learning.

The independent variables were categorized into a number of groups. Demographic factors were gender and age. Educational variables were the level of education and the type of institution. Variables related to technology were the device, internet type and network type. Variables that were associated with infrastructure were location and load-shedding. Financial condition was used as a measure of socioeconomic condition. The self-LMS variable was taken as institutional support, as it shows whether the institution possessed its own learning management system or not. The IT student variable was a measure of digital readiness, and the duration of classes was taken to learn about the exposure of students to online learning sessions. The combination of these variables offered an extensive framework of studying the circumstances that precondition the adaptability of students to the incorporation of technology in classrooms.

2.5 Data Preparation

The data set was revised prior to analysis in order to familiarize itself with the structure, the names of the variables, the categories of the responses, and the appropriateness of the data to undergo statistical analysis. Variables were verified by their consistency and relevance in terms of the research objectives. Because the majority of the variables used in the dataset are categorical, frequency-based and association-based statistical methods were used to analyze them. The levels of each variable were maintained exactly as they were in the dataset so as to maintain the structure of the original secondary data. There was no effort to identify separate respondents and analysis was restricted to the variables in the data.

2.6 Data Analysis Techniques

Descriptive and inferential statistical methods were applied in the study. First, the demographic profile of respondents, the availability of technological resources, institutional support and distribution of students across the various levels of adaptability was described using frequency and percentage analysis. Second, the adaptivity level is compared by means of cross-tabulation with the chosen independent variables (type of device used, internet type, network type, financial condition, self-LMS availability, duration of the classes, and the place). Third, chi-square tests of association were suggested to test the presence of significant relationships between adaptivity level of students

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and their choice of categorical variables. In appropriate cases, ordinal logistic regression or multinomial logistic regression may be used to determine the best predictors of the level of adaptability.

3. Results

3.1 Overview of the Dataset

The research used a secondary source found in Kaggle called Students Adaptability Level in Online Education (Mahmudul Hasan Suzan, 2021). This dataset consisted of 1,205 student-level observations and 14 variables that were linked to demographic factors, institutional background, access to technologies, learning environment, and adaptability of students to online education. None of the values were missing in the dataset and this made it possible to retain all the observations to be analyzed.

The primary outcome measure was Adaptivity Level, which was measured as Low, Moderate, and High. Independent variables were gender, age, education level, institution type, IT student status, location, load-shedding, financial condition, internet type, network type, duration of classes, self-LMS availability and the type of device.

3.2 Distribution of Students' Adaptivity Level

Table 1 and Figure 1 provide the distribution of adaptivity level of the students and summarize the data respectively. Findings indicate that most students were moderately adaptable to online learning. Among 1,205 students, 625 students or 51.9 percent of students were moderately adaptable. A significant proportion of students, 480 students or 39.8% were lowly adaptive. High adaptability was only seen in 100 students (8.3%).

These results show that though over fifty percent of the students could moderate adapt to online learning, a huge percentage had problems with adapting entirely to technology-enabled learning conditions. The comparatively low percentage of adaptively high students implies that the successful classroom technology integration is limited by various factors associated with access, institutional, and socioeconomic backgrounds.

Table 1: *Distribution of Students' Adaptivity Level*

Adaptivity Level	**Frequency**	**Percentage**
Low	480	39.8
Moderate	625	51.9
High	100	8.3
Total	**1,205**	**100.0**

As shown in Table 1, moderate adaptability was the most common category, followed by low adaptability. Figure 1 further illustrates that high adaptability was limited to a comparatively small group of students.

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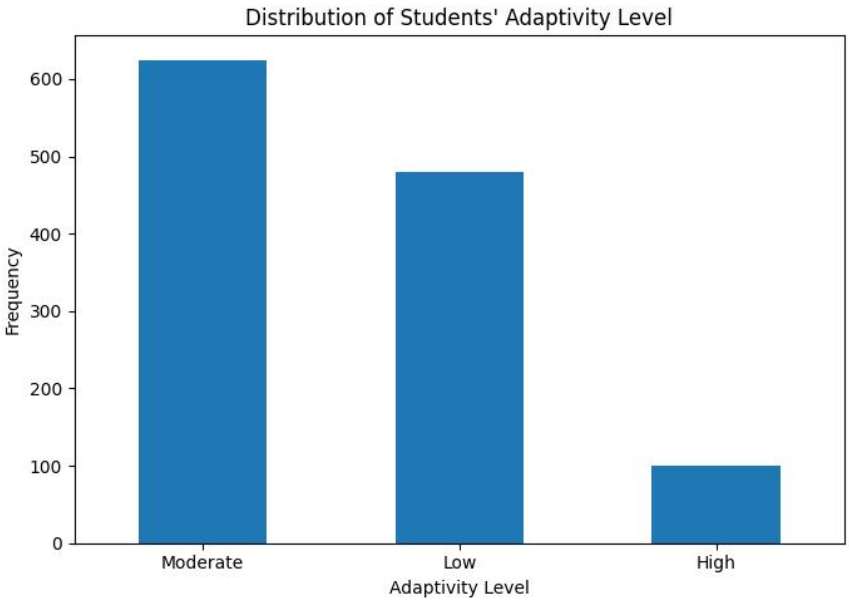

Figure 1: *Distribution of Students by Adaptivity Level*

3.3 Profile of Technological Access and Learning Conditions

The descriptive statistics in Table 2 indicate that the access of students to technology was very imbalanced. Most students utilized mobile phones in education on the internet. In particular, 84.1% of students had mobile devices, and only 13.4% of students had computers and 2.5% had tablets. This observation implies that mobile learning played a critical role in online learning.

Considering the internet access, 57.7% of students accessed mobile data and 42.3% accessed Wi-Fi. The majority of the students were connected to 4G networks, with 64.3% displaying 4G connectivity. Yet, 34.1% were utilizing 3G networks, and 1.6% were utilizing 2G networks, implying that a portion of students remained to rely on slower internet connections.

There was a low level of institutional support in terms of learning management systems. The number of students who reported having access to a self-LMS was only at 17.4% and 82.6% indicated that they had no access to an institutional LMS. It is a significant discovery since LMS can facilitate organized online education, submission of assignments, communication, and monitoring of education.

Table 2: *Technology Access and Learning Conditions of Students*

Variable	Category	Frequency	Percentage
Device	Mobile	1,013	84.1
	Computer	162	13.4
	Tab	30	2.5
Internet Type	Mobile Data	695	57.7
	Wi-Fi	510	42.3
Network Type	4G	775	64.3
	3G	411	34.1
	2G	19	1.6
Self LMS	No	995	82.6
	Yes	210	17.4
Class Duration	0 hours	154	12.8
	1 to 3 hours	840	69.7
	3 to 6 hours	211	17.5

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As presented in Table 2, students' online learning experiences were shaped mainly by mobile-based access, mobile data, and limited LMS availability. Figure 2 highlights the dominance of mobile devices as the primary medium for online education.

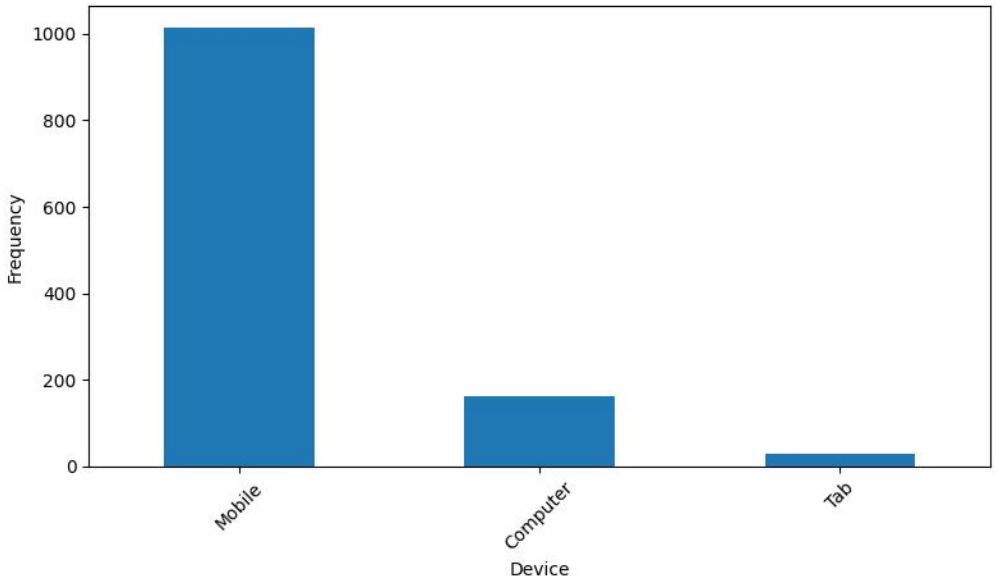

Figure 2: *Device Used by Students for Online Education*

3.4 Socioeconomic and Institutional Characteristics

Table 3 displays the socioeconomic and institutional profile of the students. The majority of the students were found to be in the middle financial condition (72.9% of the sample). The students with weak financial backgrounds constituted 20.1% whereas only 7.1% had strong financial backgrounds.

In terms of institution type, 68.3% of students belonged to non-government institutions whereas 31.7% belonged to government institutions. Regarding the location, 77.6% of the students were classified in the category of "Yes", and 22.4% of them were classified in the category of No according to the location variable of the dataset. The high percentage of students reporting low load-shedding was 83.3% and the high percentage was 16.7%.

Table 3: *Socioeconomic, Institutional, and Infrastructure-Related Profile of Students*

Variable	Category	Frequency	Percentage
Financial Condition	Mid	878	72.9
	Poor	242	20.1
	Rich	85	7.1
Institution Type	Non-Government	823	68.3
	Government	382	31.7
Location	Yes	935	77.6
	No	270	22.4
Load-shedding	Low	1,004	83.3
	High	201	16.7
IT Student	No	901	74.8
	Yes	304	25.2

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As shown in Table 3, most students belonged to middle-income backgrounds and non-government institutions. However, the presence of poor financial conditions, high load-shedding, and non-IT backgrounds among many students points to structural challenges that may affect adaptability to technology-enabled education.

3.5 Cross-Tabulation of Key Factors with Adaptivity Level

According to the cross-tabulation results in Table 4, there are significant variations in adaptivity levels amidst the chosen variables. There was a definite trend in financial condition. In the case of students with affluent financial backgrounds, 49.4% students were highly adaptable, and merely 11.8% were lowly adaptable. Conversely, in poor financial background students 53.3% were low adaptive and only 9.1% high adaptive.

The adaptivity level was also strongly related to the duration of the classes. Students with no length of class were highly clustered in the low adaptability category, as 93.5% of them mentioned low adaptability. The question of moderate adaptability and low adaptability was 69.7% in number among the students who attended 3 to 6 hours of online classes. This implies that the more online classes were exposed to the higher the adaptability.

Differences were also exhibited in institution type. The government institution students were more likely to have low adaptability 61.3% than the non-government institution students 29.9%. In the same manner, students that had access to self-LMS exhibited more adaptable patterns as compared to those students that did not have access to LMS. One in every 14.3% students with access to self-LMS had high adaptability and 61.0% students moderate adaptability.

Table 4: *Selected Cross-Tabulations of Key Factors with Adaptivity Level*

Variable	Category	Low (%)	Moderate (%)	High (%)
Financial Condition	Poor	53.3	37.6	9.1
	Mid	38.8	57.1	4.1
	Rich	11.8	38.8	49.4
Class Duration	0 hours	93.5	6.5	0.0
	1 to 3 hours	34.5	55.7	9.8
	3 to 6 hours	21.8	69.7	8.5
Institution Type	Government	61.3	33.5	5.2
	Non-Government	29.9	60.4	9.7
Self LMS	No	43.0	49.9	7.0
	Yes	24.8	61.0	14.3
Internet Type	Mobile Data	41.4	53.4	5.2
	Wi-Fi	37.6	49.8	12.5
Network Type	2G	84.2	15.8	0.0
	3G	45.3	49.4	5.4
	4G	35.9	54.1	10.1

As shown in Table 4, students with better financial condition, greater class exposure, LMS access, Wi-Fi, and 4G networks generally showed stronger adaptability patterns. Figure 3 summarizes the strength of association between selected variables and adaptivity level.

3.6 Chi-Square Test of Association

A chi-square test of association was conducted to examine whether students' adaptivity level was significantly associated with the selected categorical variables. The results are presented in Table 5. All tested variables showed statistically significant associations with adaptivity level at the 5% level.

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The strongest association was observed for financial condition, $\chi^2(4) = 236.865$, $p < .001$, Cramer's V = .314. This was followed by class duration, $\chi^2(4) = 225.918$, $p < .001$, Cramer's V = .306, and institution type, $\chi^2(2) = 107.108$, $p < .001$, Cramer's V = .298. Location also showed a moderate association with adaptivity level, $\chi^2(2) = 82.310$, $p < .001$, Cramer's V = .261.
Technology-related variables such as device, type of internet, type of network, and the self-LMS were also significantly related to the level of adaptivity. Nevertheless, they had a relatively low Cramer V value compared to financial condition, length of the classes, and type of institution. It means that the access to technology is important, but more general socioeconomic and institutional factors are observed to be more closely related to adaptability of students.

Table 5: *Chi-Square Test of Association Between Selected Variables and Adaptivity Level*

Variable	Chi-Square	df	p-value	Cramer's V
Financial Condition	236.865	4	< .001	.314
Class Duration	225.918	4	< .001	.306
Institution Type	107.108	2	< .001	.298
Location	82.310	2	< .001	.261
Age	125.296	10	< .001	.228
Self LMS	29.535	2	< .001	.157
Device	52.519	4	< .001	.148
Internet Type	21.036	2	< .001	.132
IT Student	19.597	2	< .001	.128
Education Level	38.686	4	< .001	.127
Network Type	30.243	4	< .001	.112
Gender	13.451	2	.001	.106
Load-shedding	9.972	2	.007	.091

As indicated in Table 5, financial condition, class duration, and institution type had the strongest associations with students' adaptivity level. Figure 3 presents these association strengths using Cramer's V values.

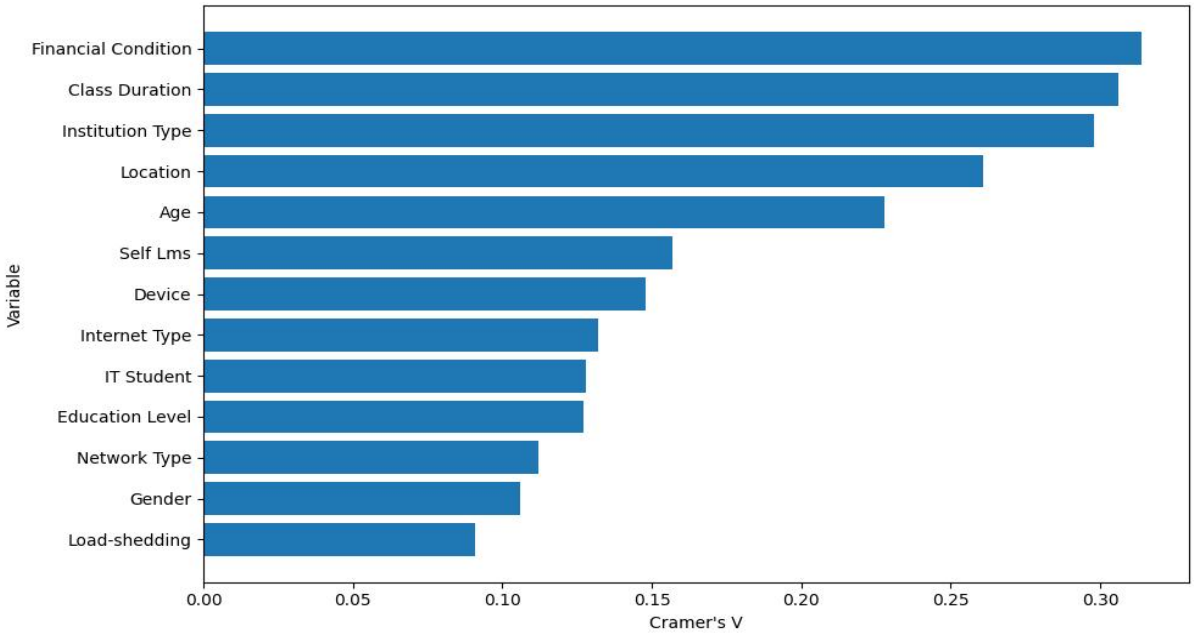

Figure 3: *Strength of Association Between Selected Variables and Adaptivity Level Based on Cramer's V*

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3.7 Summary of Major Findings

The findings indicate that moderate and low adaptability to online education were the most common among the students with relatively rare high adaptability. Only 8.3% of the students were highly adaptive as illustrated by Table 1 and Figure 1. Table 2 descriptive findings reveal that mobile phones, mobile data, and 4G networks played a vital role in online education, with limited access to institutional LMS.

Table 4 results of the cross-tabulation suggest that students with higher financial background, longer online classes, non-government institutions and students with access to self-LMS were found to have better patterns of adaptability. Table 5 Chi-square results once again attest to the fact that adaptivity level had a significant relationship with all the demographic, institutional, technological, and socioeconomic variables chosen.

On the whole, the results indicate that the integration of technology in the classroom is not just a matter of bringing digital devices or online learning platforms. Instead, flexibility to technology-based learning is determined by financial situation, institutional facilitation, classroom exposure, location, accessibility to devices, internet speed and learning infrastructure of students. The findings empirically prove the argument that the technology integration in the classroom of the future should consider both digital and structural inequalities to become effective, inclusive, and sustainable.

4. Discussion

The results of this research indicate that the adaptability of students to online education was clustered in the moderate and low categories with high adaptability being low. This trend shows that the integration of technology in the classroom is yet to attain a level where the majority of the learners can use digital learning systems with a lot of confidence and effectiveness. This conclusion aligns with the premise that online learning presents valuable learning opportunities, yet the success of the online learning process is determined by the willingness of students, resource availability, organizational support, and the quality of implementation (Adedoyin and Soykan, 2023). The current research indicates that only a few percentage of students were highly adaptable, which means that technology-based education is still unequal and needs a further methodological planning.

One of the significant discoveries made was the high correlation between financial condition and the level of adaptivity of students. Students with stronger financial backgrounds were more adaptable and students with weaker financial backgrounds were more concentrated in the low adaptability group. This reaffirms the fact that socioeconomic inequality extensively influences online and technology-based education. Students who are financially stable tend to have more stable devices, quality internet access, appropriate study environments and enhanced digital exposure. Conversely, students with low financial status might have challenges with sharing devices, mobile charges, poor connectivity, and lack of support in their education. This observation correlates with UNICEF (2021) that highlights the inequity of educational disruption, especially among learners who do not have the resources to engage in remote or digital learning.

Adaptivity level was also strongly correlated with Class duration. Students with a longer online class period were more likely to exhibit moderate or higher adaptability, and those with no duration of classes were found in the low adaptability category by overwhelming percentages. This implies that the accustomed exposure to online educational settings could enhance familiarity, confidence, and behavioural acclimatisation of students. Adaptability is not a technological state alone; it is also a learning attitude that is acquired with repeated exposure to dynamic academic challenges. According to Martin et al. (2021), the issue of student adaptability is paramount in online education since students have to adapt their behavior, cognition, and emotion to new teaching conditions. This view is validated by the current findings that revealed that more online classes were observed to have better adaptive patterns among students with higher exposure to online classes.

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Another factor of significance that was related to the level of adaptivity was institution type. Non-government students were more adaptive compared to government students. This can capture disparities in infrastructure, online readiness, institutional investment, and online teaching facilities. Nonetheless, this finding must be taken with a grain of salt since the dataset lacks more detailed explanations at an institutional level. Nonetheless, the result confirms the broader perspective that successful online education needs to be designed digital systems, as opposed to ad hoc or resource-strained ones. Hodges et al. (2020) draw a line between emergency remote teaching and well-thought-out online learning, stating that the quality of digital education lies in planning, the design of the teaching process, and the institutional preparedness. In the current research, it has been identified that, in the case of weaker institutional conditions, student adaptability is most likely to be low.

It was also found that access to self-LMS was related to enhanced adaptability. Moderate and high adaptability were more common in students who had access to LMS than non-students who had access. This implies that digital learning can be facilitated through institutional learning platforms which help to organize content, assignments, communication, assessment and feedback. This result is coherent with the argument of Ertmer and Ottenbreit-Leftwich (2010) that the integration of technology is not only determined by the availability of hardware, but also by the willingness of teachers, their confidence, pedagogical beliefs, and culture of the institution. Technology is only educationally significant in a classroom setting when institutions and teachers can incorporate it into institutionalized learning activities.

Factors related to technology like the type of device, internet type and network type were also found to significantly correlate with adaptivity level, but the strength of the correlation was less than financial condition, duration of classes and type of institution. The prevalence of mobile phones as the primary learning tool suggests that online learning in this sample was highly mobile-based. Although mobile learning can enhance access, it can also reduce the ability of students to read long texts, do assignments, discuss and access complex learning platforms. This observation aligns with Coman et al. (2020), who discovered that the experiences of online learning depend on the technological access, the quality of interaction, and the constraints of online learning settings in students.

The results also prove the notion that online learning does not only have opportunities, but also restrictions. On the one hand, technology facilitates flexible learning, access to online resources, continuity of education and new communication. Conversely, it has been limited by the unequal accessibility, unstable connectivity, insufficient preparation, and poor pedagogical integration. Similar arguments are made by Dawan (2020), who claims that online learning was a forced option during the COVID-19 era, yet it revealed issues pertaining to infrastructure, digital literacy, and learner interaction. Similarly, Pokhrel and Chhetri (2021) highlight that the pandemic interfered with teaching and learning processes worldwide and speeded up the necessity to reconsider the delivery of education.

In general, the paper indicates that the process of classroom technology integration must be thought of as a multidimensional one. Devices do not define the adaptability of the students. It is influenced by financial background, institutional support, class exposure, location, internet quality, LMS availability and learner readiness. These results can be aligned to Chung et al. (2020), who highlight the importance of considering online learning readiness, which comprises access, motivation, self-directed learning and confidence in technology use. This means that technology integration in the future should not be isolated on the delivery of digital tools. It must lay emphasis on fair access, institutional resilience, teacher readiness, student digital skills and inclusion in learning. It is at this point that technology integration will be effective, sustainable and educationally meaningful.

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DOI: 10.65327/es.v12i1.2530

5. Conclusion

This paper explored the concept of integrating technology in classrooms in terms of the flexibility of students to online learning based on the secondary data Students Adaptability Level in Online Education. The results indicate that a large percentage of students was found to be moderately adaptable and a large percentage was found to be low adaptable and a small percentage was found to be high adaptable. This implies that despite the fact that technology-based learning has been on the increase, a good number of students continue to experience barriers that restrict their capacity to effectively engage in digital learning settings. The findings indicate that the adaptability of students is influenced by a mixture of socioeconomic, institutional, technological, and learning-related aspects. The best associations with adaptivity level were found with financial condition, duration of classes, type of institution, and location. Factors that were mainly related to technology, like the type of device, internet, network, and access to a learning management system, were also found to have a significant relationship with the adaptability of students. These results justify that integrating technology is not just about the introduction of digital devices or online platforms. Its success relies on the fair access, reliable infrastructure, institutional readiness, and learner readiness. The paper concludes that the application of technology in classrooms presents significant possibilities of flexibility, greater access to learning materials and enhanced continuity of instruction. These opportunities, however, are not going to be actualized fully unless digital inequalities are resolved. Affordable internet access, availability of devices, good electricity, strong LMS service, and training students and teachers in digital literacy must be a priority of educational institutions and policymakers. Incorporating technology in the future classrooms should follow an inclusive and well thought-out model of technology integration incorporating the use of digital tools, good pedagogy, and institutional support. The integration of sustainable technology must not only focus on innovation but on equity, accessibility and meaningful student engagement.

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