SCIENTIFIC CULTURE
www.sci-cult.com

SCIENTIFIC CULTURE, Vol. 11, No. 3, (2025), pp. 340-346
Open Access. Online & Print

DOI: 10.5281/zenodo. 17987030

EVALUATION OF TECHNOLOGY ACCEPTANCE AMONG SCHOOL TEACHERS IN HYBRID LEARNING SYSTEMS

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Received: 15/12/2024
Accepted: 02/01/2025

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ABSTRACT

The rapid digitalisation of the education sector has led to the increased use of hybrid learning systems, especially after COVID-19 pandemic. Hybrid learning systems can be successful based on the personal willingness as well as ability of school teachers to integrate advanced technology into teaching methods. This research aims to assess the level of technology acceptance by school teachers and its impact on hybrid learning systems. This research has used quantitative research design. A structured questionnaire was designed and filled out by school teachers who are practicing hybrid learning systems. The data collected was analysed to determine the relationship between the acceptance of technology and the success of hybrid learning systems. The results reveal that a higher level of technology acceptance among teachers is a significant contributor to the success of implementing hybrid learning models in the school context. Teachers' perception of the benefits of technology can lead to the development of interactive learning activities, increasing students' learning engagement, and ensuring learning continuity. The study developed a conclusion that technology acceptance of teachers is a significant factor in the sustainability of hybrid learning systems in schools. The results have also revealed that educational policy makers and administrators need to focus on teacher training, technology support, and a positive learning environment in terms of technology to enhance the effectiveness of hybrid learning models. The study contributes to the existing body of knowledge on technology in education by focusing on the mediating role of school teachers in implementing technology acceptance in hybrid learning models in the school context.

KEYWORDS: Technology acceptance, school teachers, hybrid learning systems, attitudes, perceptions

1. INTRODUCTION

The dynamic development of digital technologies has profoundly reshaped the educational environment of the modern world, and schools have been forced to shift from traditional teaching approaches to more flexible and technology-assisted models. Among the new technologies, the development of hybrid learning systems, based on the rational combination of traditional and online teaching approaches, has been recognised as an effective solution to modern pedagogy (Weilage & Stumpfegger, 2022). The technology and structural aspects of hybrid learning have been of great importance, but the human factor, especially the role of school teachers, is of crucial importance to successful integration of hybrid learning. The success of hybrid learning is not measured by the development of digital technologies but by the degree to which school teachers can effectively assimilate and integrate technology into teaching practices (Mushtaq & Iqbal, 2024).

Technology acceptance is considered an essential factor in the transition to modern pedagogy. It is defined as the cognitive and affective judgments of teachers concerning digital technologies, including their perceived usefulness, ease of use, and overall value to improving teaching outcomes. While resistance, anxiety, or a lack of digital competence may hinder integration, positive acceptance can facilitate innovation, cooperation, and student-cantered learning environments. Despite the increasing support for hybrid learning, existing gaps in teacher readiness and attitude towards technology pose a challenge to its integration in schools. Therefore, in order to comprehend the operationalisation of hybrid learning systems in school settings, it is critical to evaluate the dynamics of technology acceptance, considering school teachers as the mediating agents in this context (Mulenga & Shilongo, 2025).

2. BACKGROUND OF THE STUDY

Educational systems around the world have undergone a rapid digital transformation over the last decade. Online learning platforms, learning management systems, and digital learning tools have changed the face of traditional learning systems. This digital transformation has accelerated with the onset of the COVID-19 pandemic, which has forced educational systems around the world to adopt digital learning systems. With the transition from emergency remote learning systems to hybrid learning systems, the focus has been on the long-term incorporation of technology into learning systems (Al-Qashouti, 2024). Hybrid learning systems integrate traditional learning experiences with digital learning systems, providing a flexible learning experience for students. However, the technological infrastructure itself does not ensure the successful incorporation of learning systems. Teachers are the primary agents who can successfully incorporate hybrid learning systems. Teachers' competence, self-efficacy, and learning attitude are critical determinants for the successful incorporation of learning systems (Peng et al., 2024).

The theoretical foundations for the acceptance of technology can be traced back to the Technology Acceptance Model, which was originally proposed by Fred Davis, emphasising the perceived usefulness and perceived ease of use as determinants for the acceptance of technology (Davis, 2985). Subsequently, the Unified Theory of Acceptance and Use of Technology extended the determinants for the acceptance of technology by incorporating social influences and facilitating conditions (Venkatesh et al., 2003). However, the application of the theoretical frameworks has been largely implemented for business organisations and educational institutions, while the acceptance of technology for school teachers in hybrid learning systems has been less addressed.

The acceptance of technology for teachers plays a vital role, as it influences the learning strategies, which can be implemented for the success of the hybrid learning systems. If the hybrid learning systems are not accepted by the teachers, it would be difficult for the systems to achieve the desired educational outcomes (Raes, 2022). Hence, it becomes vital for the development of the hybrid learning systems for the acceptance of the technology by the teachers.

3. PURPOSE OF THE RESEARCH

The purpose of this research is to determine the level of technology acceptance among school teachers and its impact on the effectiveness of hybrid learning systems. Specifically, the purpose of this study is to identify the factors that influence the perception of usefulness and ease of use of technology among school teachers, and to determine the impact of these perceptions on the implementation of hybrid learning systems. By examining the role of school teachers as a mediator of the relationship between technology acceptance and hybrid learning systems, this research hopes to make recommendations to improve the effectiveness of technology integration in schools.

4. LITERATURE REVIEW

In the context of hybrid learning systems, which integrate online and traditional teaching methods, the effective implementation of these systems necessitates the involvement of teachers. Research has established the significance of the attitudes of teachers towards technology, which positively influences the engagement of students, interactive learning, and flexibility. Additionally, demographic characteristics such as age, experience, and subject specialisation can influence the relationship between technology acceptance and the effectiveness of hybrid learning systems (Mohammed, 2024). Digital competence, training, and conditions for teachers are critical determinants for the acceptance and adoption of technology. Positive perceptions of technology are also related to increased instructional innovation and increased engagement for students in hybrid learning settings (Yao & Wang, 2024). Research findings suggest that a teacher's technology skills, self-confidence, and training opportunities are critical in determining the extent to which a teacher is likely to accept technology, thus increasing his or her intention to use hybrid teaching methods in the classroom (Wang et al., 2023).

The acceptance of technology has been a widely researched area in many disciplines, especially in information systems research. Fred Davis' Technology Acceptance Model states that perceived usefulness and ease of use are significant predictors of an individual's attitude and behavioural intention to adopt a particular technology (Davis, 1985). In the context of education, these constructs are critical in determining the extent to which a teacher uses technology in the teaching methods. Further extensions of the Technology Acceptance Model, such as the Unified Theory of Acceptance and Use of Technology, included other constructs, including social influence and facilitating conditions. These conditions are critical in a school environment, considering the influence of school administrators and other students on a teacher's technology adoption and usage behaviours (Buraimoh et al., 2023). The construct of technology acceptance has been largely investigated in educational studies as a determinant for the successful implementation of technology. According to the Technology Acceptance Model, the perceived ease of use and perceived usefulness of technology are significant determinants for individuals' attitudes towards the acceptance and adoption of technological systems (Davis, 1985). In the context of educational settings, the same constructs are determinants for teachers' willingness to integrate technology into their practices. Following this, integration of both Technology Acceptance Model and Unified Theory of Acceptance and Use of Technology has also suggested that social influences and facilitating conditions are also determinants for the acceptance and adoption of technology among school teachers for successful implementation of hybrid learning system in modern times (Venkatesh et al., 2003). Although research has extensively focused on the context of blended learning systems, few studies have specifically focused on the mediating effect of school teachers in the context of technology acceptance and hybrid learning systems. This study aims to bridge the gap by providing an evaluative context of technology acceptance among school teachers.

5. RESEARCH QUESTION

What is the impact of technology acceptance on hybrid learning systems through school teachers?

6. RESEARCH METHODOLOGY

6.1 Research Design

A quantitative research analysis method was used. The researcher of the study used SPSS 25 to evaluate the quantitative data. The odds ratio and 95% confidence interval were used to evaluate the strength and extent of the statistical correlation. A p-value below 0.05 indicates statistical significance of the findings. Descriptive analysis facilitated a profound comprehension of the data's essential structure.

6.2 Sampling

The researcher has used a purposive sampling strategy for collecting information directly from participants. The researcher used the Rao-soft software to include 1132 participants as the optimal sample for the research. Following this, a total of 1300 questionnaire were distributed to the survey participants i.e. school teachers who are practicing hybrid learning systems. The researchers got 1256 questionnaires back while a total of 56 questionnaires were excluded due to its incompleteness and unreliability. Finally, the research has a total sample size of 1200 school teachers.

6.3 Data and Measurement

The research integrated quantitative analysis to get results. Participants in the survey were asked to evaluate their responses using a five-point Likert scale. The researcher used online tools to collect secondary data for the study.

6.4 Statistical Software

The researcher utilised Microsoft Excel and SPSS-25 for conducting statistical data analysis.

6.5 Statistical Tools

From the analysis of the descriptive data, various demographic characteristics were identified. Inductive statistical analysis utilises a number of methodologies to test the reliability and validity of theories, as well as to calculate the odds ratios with their 95% confidence intervals and other statistical tools.

7. CONCEPTUAL FRAMEWORK

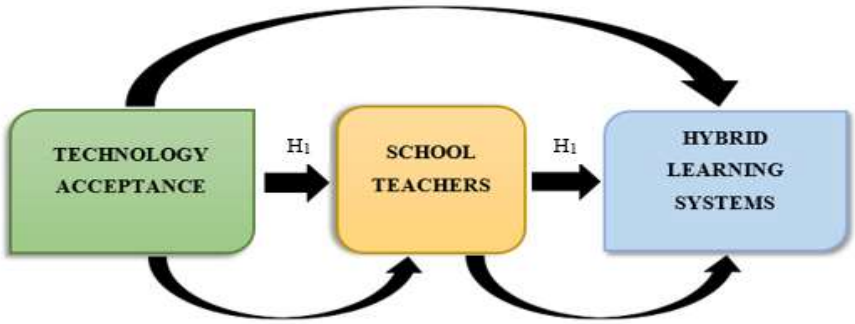

Figure 1:

8. RESULT

Factor Analysis

Factor Analysis (FA) using publically accessible data may assist in uncovering latent factors. Simulations may identify potential risks, establish correlations, and reveal inadequacies. The researchers examine the results of several regression studies using Kaiser-Meyer-Olkin (KMO) tests. The statistical model and its dependent variables provide a very accurate estimate of the dependent variable. There may be several occurrences of data duplication. Data is more comprehensible when it is not very disparate. KMO may provide researchers with any integer between 0 and 1. The sample is sufficiently big if the KMO score ranges from 0.8 to 1. Kaiser asserts that it must meet certain conditions to get accreditation: The value of 0.050 to 0.059 is much lower than the typical range of 0.60 to 0.69. A score ranging from 0.70 to 0.79 is considered typical for a middle school student. It has a broad range, with measurements spanning from 0.90 to 1.00.

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy: .938

The outcomes of Bartlett's test of sphericity are as follows:

Approximate chi-square = 3252.968
Degrees of freedom = 190
Significance = 0.000

Table 1: KMO and Bartlett's Test

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.938
Bartlett's Test of Sphericity	Approx.Chi-Square	3252.968
	df	190
	Sig.	.000

The overall importance of the correlation matrices was also validated by Bartlett's Test of Sphericity. The Kaiser-Meyer-Olkin sampling adequacy is 0. 938. Employing Bartlett's sphericity test, researchers obtained a p-value of 0.00. A notable result from Bartlett's sphericity test indicated that the correlation matrix is not valid.

- ***INDEPENDENT VARIABLE***

- ***Technology Acceptance***

Technology acceptance can be defined as the extent to which individuals are willing to adopt new technological systems for use in their professional lives. In the case of educational institutions, it can be defined as the willingness, attitude, and intention of the teacher in the school to adopt new technology for use in the educational process. In this context, Technology Acceptance Model represents that the main determinants for the acceptance of new technology are the perceived ease of use and the perceived usefulness of the new technology. In this case, the perceived ease of use can be defined as the extent to which the new technology can be easily used, while the perceived usefulness can be defined as the extent to which the new technology can be useful for the educational process. Therefore, the main driver for the adoption of new technology can be based on the concept of technology acceptance (Taherdoost et al., 2024).

❖ ***MEDIATING VARIABLE***

- ***School Teachers***

Teachers act as the mediating variable in the study, as they directly impact the relationship between technology acceptance and the development of effective hybrid learning systems. In fact, the effectiveness of technology, despite the availability of technological infrastructure, largely depends on the teachers' competence, attitude, and practices. Teachers interpret, apply, and utilise technological tools based on the learning context, which impacts the learning experiences of the students. Teachers' digital literacy, experience, pedagogical beliefs, professional training, and self-efficacy are some of the prominent variables that impact the application of technology in the learning process. Teachers' positive attitude and high self-confidence can be helpful in creating a conducive environment for the effective application of technology acceptance. If the teachers exhibit high technology acceptance and possess the required competence, it can be easier for them to develop effective hybrid learning systems. However, the lack of self-confidence and resistance to change can impact the effectiveness of the relationship between technology acceptance and learning outcomes (Yan, 2022).

❖ ***DEPENDENT VARIABLE***

- ***Hybrid Learning Systems***

Hybrid learning systems can be defined as the instructional systems that integrate traditional face-to-face learning with the use of technology, which helps in creating learning environments that are adaptive and flexible. There are various determinants that can be used to measure the effectiveness of hybrid learning systems, which include increased student engagement, learning flexibility, learning continuity, and improved learning outcomes. When implemented, hybrid learning systems can provide learning environments that are personalised, collaborative, and inclusive. However, the effectiveness of hybrid learning systems cannot be attributed solely to the availability of technology, as it mainly depends on the extent to which the teacher has adopted the technology. Therefore, hybrid learning systems can be considered the outcome variable that depends on the acceptance and usage of technology by the teacher (Weilage & Stumpfegger, 2022).

- ***Relationship between technology acceptance and hybrid learning system through school teachers***

The relationship between technology acceptance and hybrid learning systems is significantly mediated by school teachers. Technology acceptance, in itself, does not ensure the effectiveness of hybrid learning systems; instead, it influences the attitude, intentions, and practices of school teachers. When school teachers are highly accepting of technology, it is expected that they will confidently incorporate technology into their teaching practices, thereby enriching the effectiveness of teaching and learning in hybrid learning systems. Conversely, low technology acceptance may lead to low technology use, thereby reducing the effectiveness of hybrid learning systems. Therefore, technology acceptance influences the practices of school teachers, and the practices of school teachers determine the effectiveness of hybrid learning systems. In other words, school teachers are the mediating variable in the relationship between technology acceptance and hybrid learning effectiveness (Tan et al., 2024).

After assessing the previous argument, the researcher has arrived at the following hypothesis to evaluate the effect of the technology acceptance and hybrid learning system through school teachers.

- ***"H01: There is no significant relationship between technology acceptance and hybrid learning system through school teachers."***
- ***"H1: There is a significant relationship between technology acceptance and hybrid learning system through school teachers."***

Table 2: H1 ANOVA Test

Sum					
	Sum of Squares	**df**	**Mean Squares**	**F**	**Sig.**
Between Groups	39588.620	819	5698.832	1057.348	.000
Within Groups	492.770	506	5.548		
Total	40081.390	1199			

The statistical analysis through ANOVA analysis has uncovered substantial findings on the overall research context. Statistical significance is attained with a p-value below 0.05 and an F-value of 1057.348 was identified. This indicates that the hypothesis ***"H_1: There is a significant relationship between technology acceptance and hybrid learning system through school teachers"*** is accepted, on the other hand, the null hypothesis is rejected.

9. DISCUSSION

This research aims to investigate the process of technology acceptance by school teachers and its impact on the hybrid learning system. The results show the vital role of technology acceptance in the successful implementation of the hybrid learning model. Hybrid learning is an essential approach in modern education, which demands the application of

technology along with traditional face-to-face teaching methods. The teachers' perception, attitudes, and willingness towards the use of technology are critical in the effective implementation of the hybrid learning model. If the teachers are aware of the benefits and usability of technology, they are likely to have the confidence to use digital platforms, multimedia, and virtual communication tools in the teaching process. This would lead to an effective learning environment, flexibility in teaching methods, and effective communication with the learners. The role of teachers in mediating the relationship between schools and technology is critical in this regard. While schools have the necessary infrastructure, the success of a hybrid learning program largely depends on teachers' willingness and capabilities in incorporating technology into their teaching practice. Teacher development, training, and education improve teachers' technology skills and technology acceptance. Hence, for a hybrid learning program to be successful, it is not just the availability of technology that is necessary, but teachers must accept and implement it.

10. CONCLUSION

In conclusion, acceptance of technology is an essential factor for the success of hybrid learning systems in schools. Teachers are the vital link in the process of linking technology and its successful outcomes. The attitudes, perceptions, and willingness of teachers towards the use of technology have a direct impact on the success of hybrid learning systems. For the hybrid learning systems to work effectively, the schools need to focus on the enhancement of the digital skills of teachers and the development of positive attitudes towards the use of technology. The success of hybrid learning systems is not based on the availability of technology, but on the willingness and ability of the teachers to adapt to the latest technological developments. The enhancement of the acceptance of technology by teachers in schools is the key to the success of hybrid learning systems.

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