

Analysis of Teacher Preparedness for Using Technology in the Classroom Learning Process

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Abstrak

Kata Kunci:

Guru, Teknologi,
Pembelajaran.

Perkembangan teknologi informasi dan komunikasi (TIK) telah memberikan dampak yang signifikan pada beberapa industri, khususnya pendidikan. Salah satu kendala yang muncul adalah kesiapan instruktur untuk menggunakan teknologi dalam proses pendidikan di dalam lingkungan kelas formal. Sejumlah penelitian telah mengungkapkan bahwa meskipun teknologi berkembang pesat, tidak semua guru siap untuk menggunakannya secara maksimal. Tujuan dari penelitian ini adalah untuk menilai kesiapan instruktur dalam memanfaatkan teknologi di kelas, mengidentifikasi kendala yang mereka hadapi, dan mengusulkan solusi untuk meningkatkan keberhasilan integrasi teknis dalam proses pembelajaran. Penelitian ini menggunakan metodologi survei kuantitatif, dengan mendistribusikan kuesioner kepada 100 guru dari berbagai tingkat pendidikan. Temuan menunjukkan bahwa mayoritas instruktur memiliki akses ke teknologi, tetapi hanya 45% yang memiliki keyakinan yang diperlukan dalam penggunaannya. Pelatihan yang tidak memadai, infrastruktur pendukung yang tidak memadai di sekolah, dan kurangnya keakraban dengan aplikasi teknologi dalam kurikulum merupakan kendala utama yang teridentifikasi. Hasil ini menunjukkan bahwa instruktur memerlukan pelatihan berkelanjutan dan infrastruktur yang memadai untuk meningkatkan kesiapan teknologi mereka. Oleh karena itu, adalah mungkin untuk mengintegrasikan teknologi ke dalam proses pendidikan secara lebih efisien dan sejalan dengan tuntutan pendidikan modern.

Abstract

Key Word:

Teachers,
Technology,
Learning.

The development of information and communication technology (ICT) has had a significant impact on several industries, particularly education. An obstacle that emerges is the preparedness of instructors to use technology in the educational process inside the formal classroom setting. Numerous studies have revealed that despite the rapid development of technology, not all teachers are well prepared to use it to its fullest potential. The objective of this study is to assess the preparedness of instructors to utilize technology in the classroom, pinpoint the obstacles they encounter, and propose remedies to enhance the efficacy of technical integration in the learning process. This study utilized a quantitative survey methodology, distributing a questionnaire to 100 teachers from various educational levels. Findings indicate that the majority of instructors have access to technology, but just 45% possess the necessary confidence in its use. Insufficient training, inadequate supporting infrastructure in schools, and a lack of familiarity with technological applications in the curriculum are the primary obstacles identified. These results suggest that instructors need ongoing training and adequate infrastructure to improve their technology readiness. Therefore, it is possible to integrate technology into the education process more efficiently and in line with the demands of modern education.

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INTRODUCTION

The importance of incorporating technology into education is growing in tandem with the advancement of the digital era (Kmecová, 2020). The advent of information and communication technology (ICT) has not only revolutionized our information retrieval strategies but has also had a profound impact on classroom instructional approaches. This study is significant because several teachers lack comprehensive preparation or proficiency in effectively incorporating technology into the student learning process. This phenomenon can result in a discrepancy between technology's capabilities and its practical integration in education, affecting learners' learning quality and academic performance (Sansanwal & Yadav, 2023).

The goal of this study is to evaluate instructors' readiness to use technology in the classroom learning process. The study encompasses instructors at primary to secondary education levels, with a specific emphasis on the abilities, knowledge, and obstacles encountered in successfully employing technology. The research also considers correlated elements such as infrastructure accessibility, training, and technology integration into the curriculum. Recent research emphasizes the significance of incorporating technology into an educational framework. Chima Abimbola et al.'s (2024) study underscores the growing importance of technology

integration in education to improve learning outcomes and promote equity.(Eden et al., 2024) Conversely, Fikri & Mariana's (2022) research indicates that a significant number of instructors in Indonesia lack the necessary confidence and expertise to effectively use technology in educational environments. An empirical investigation of primary school educators revealed that they exhibited modest degrees of technological preparedness and self-reliance in terms of computer proficiency, with the bulk still lacking familiarity with digital technology beyond basic tools. (Fikri & Mariana, 2022) This research sees technology as a complementary factor rather than an essential element of the educational experience.

Previous research excels at emphasizing the importance of digital infrastructure and adequate teacher training as critical elements that facilitate the successful integration of digital platforms in education.(Dervishi & Vrapı, 2022) Nevertheless, a significant drawback is the absence of a thorough examination of the psychological and motivational obstacles encountered by educational professionals. Furthermore, certain studies often fail to provide actual answers that can be implemented in the field, instead focusing solely on the issues without presenting suitable alternatives.

Prior studies indicate that while many schools have embraced technology, its applications in teaching remain suboptimal, as educational institutions continue to rely on substitution-level technological integration rather than using gadgets to rethink the learning process.(Soskil, 2018) Many acknowledged concepts, like the necessity of teacher-student cooperation in technology use, have not yet seen widespread implementation. Contemporary circumstances indicate that a significant number of educators exhibit reluctance to adopt technology, mostly due to apprehensions over technological malfunctions, inadequate assistance, and insufficient training (Czubaj, 2004).

The goal of this study is to thoroughly examine instructors' readiness to use technology, including the determinants that impact it, such as training quality, infrastructure availability, and knowledge of the technology. The uniqueness of this study resides in its comprehensive methodology that assesses not just the technical elements but also the psychological and motivational drivers that impact teacher preparedness. This paper addresses a gap in the existing literature by conducting a comprehensive examination of personal and institutional obstacles and presenting practical suggestions that schools and governments might use to enhance teachers' preparedness to use technology.

Rapid technological progress has revolutionized several facets of life, including the field of education. Instructors must stay updated with these advancements to effectively use technology in the educational process. Nevertheless, a significant number of teachers lack the willingness or adequate proficiency to effectively employ technology in the educational setting. This situation gives rise to apprehensions that the disparity between technology and teaching can diminish the efficacy of classroom instruction. Hence, it is crucial to critically examine the preparedness of instructors to use technology and the obstacles they encounter.

METHOD

The present study employs a descriptive quantitative research design to identify and analyze the preparedness of instructors to use technology in the classroom learning process.(Rao & Jalil, 2021) This design was chosen based on its suitability for accurately depicting the current state and enhancing comprehension of the phenomena under investigation. Quantitative methodology allows for the systematic collection, analysis, and presentation of numerical data to generate objective conclusions.

The present study is a survey investigation employing a quantitative methodology.(Creswell & Creswell, 2017) The survey method was chosen because it efficiently collects data from a large number of participants over a short period. The objective of this quantitative research is to provide a comprehensive understanding of instructors' preparedness to use technology by analyzing statistically examined data.

The participants in this study were teachers who taught students from primary to secondary education levels in various schools in Pangkalpinang City. The researcher used a purposive sampling strategy to select a sample of 100 teachers. The teachers were selected based on their access to technology, incomplete training, or ignorance of the application of technology in teaching. The study aims to assess teachers' preparedness to utilize technology by evaluating various dimensions, including their technological competencies, frequency of technology use in the classroom, and their views on the advantages of technology in the learning process.

Data was collected by distributing questionnaires to participants.(Lund, 2023) The survey asked participants to evaluate their readiness and barriers to effectively utilizing technology using a Likert scale of 1–5. The tool was developed specifically to evaluate a variety of factors, including ease of technology use, level of training received, availability of technology infrastructure, and level of institutional support. In addition to the questionnaire, the researcher also conducted semi-structured interviews with 10 instructors to gain a deeper understanding of the personal and professional challenges they face when integrating technology into their teaching. The purpose of these interviews was to enhance the quantitative data obtained from the

questionnaire and offer a more thorough perspective.

Using descriptive statistical methods and SPSS software to analyze questionnaire data.(Pallant, 2020) To measure the distribution of data and assess the level of teacher readiness, the researcher presents the study findings using percentages, means, and standard deviations. After that, correlation analysis was conducted to investigate the relationship between factors such as infrastructure availability and training and teachers' readiness level in utilizing technology. Analyze the data collected from the interviews. Next, categorized and organized the interview responses collected based on topics relevant to teachers' technology readiness. The interview findings were subsequently compared with the results of the quantitative analysis to establish consistency and strengthen the overall research evidence.

RESULT AND DISCUSSION

Out of the 100 participants engaged in the survey, 70% of teachers indicated that they possess sufficient access to technology in their educational institutions, including computers, projectors, and the internet. Nevertheless, a mere 45% of them possessed the necessary confidence to apply these technologies as educational instruments. The results indicated that 85% of instructors acknowledged the absence of specific training on the use of technology in education, while 60% of teachers pointed out a scarcity of supporting infrastructure in their institutions.

Table 1. Distribution of teacher readiness based on several key indicators

Indicators	Average	Standard Deviation
Access to technology	4.2	0.8
Confidence in using technology	2.7	0.9
Training received	2.3	1.0
Institutional support	3.1	0.7

Before undertaking further analysis, a reliability test was performed on the questionnaire employed to evaluate the preparedness of teachers. The Cronbach's alpha coefficient of the questionnaire for all items was 0.82, which indicates a high level of internal consistency for the measuring instrument. Then a validity test was conducted using item-total correlation, and all items showed a correlation coefficient above 0.3, thus confirming their validity. The present study additionally examined the premise that there exists a positive correlation between more rigorous training and instructors' preparedness to employ technology. The Pearson correlation test yielded a correlation coefficient of $r = 0.62^{**}$ with a significance level of $p < 0.01^{**}$, indicating a statistically significant association between training and teacher preparedness. The primary research inquiry is the level of teacher preparedness to use technology during the learning process. The study suggests that teachers' preparedness is moderate, with the majority lacking full confidence in their ability to use technology in the classroom. Additional results indicate that insufficient training and outdated infrastructure.

This result aligns with the conclusions of Pelila et al. (2022), who also demonstrated that insufficient training is a substantial obstacle to the proper use of technology in educational institutions. Scholarly investigations have repeatedly shown that insufficient training is a major obstacle to the incorporation of technology in educational institutions.(Pelila et al., 2022) This work makes a significant contribution by demonstrating that institutional support, in addition to training, significantly influences teacher preparedness, a topic not extensively explored in prior studies. The results of this study indicate that enhancing teachers' preparedness to use technology relies not only on training but also on more extensive support from the institution, which includes the supply of sufficient infrastructure.(Petko et al., 2018) This analysis suggests that to improve the quality of technology-based learning, it is necessary to include the active participation of both the school and government in providing the required facilities and ongoing training.

Schlosser et al. (1999) conducted prior research demonstrating that the use of technology in educational programs can greatly enhance student engagement and academic achievements.(Schlosser et al., 1999) Delivering comprehensive training to educators on the efficient use of technology and executing targeted interventions to address obstacles have demonstrated encouraging outcomes in enhancing student involvement.(Schlosser et al., 1999) To enhance the validity of these results, this study incorporates the aspect of teacher preparedness as a factor influencing the effective incorporation of technology. It demonstrates that an absence of teacher preparedness will hinder the successful implementation of anticipated technological integration.

The robustness of this research discovery lies in its comprehensive methodology, which considers not only technical aspects like training and technological availability but also institutional and psychological elements that impact teacher preparedness. By offering a greater understanding of teacher preparation, this

research contributes to the scientific growth of education and can serve as the foundation for policymakers to build more targeted training and infrastructure programs.

Moreover, this study provides practical insights for schools and educational institutions to pinpoint areas requiring enhancement to enable the best possible utilization of technology. Therefore, this research can enhance the existing body of knowledge on the integration of technology in education and provide a valuable point of reference for future, more comprehensive investigations on successful strategies to enhance teacher preparedness.

CONCLUSION

The results of this study indicate that instructors' readiness to use technology in the learning process remains moderate. While most educators have access to technology in their schools, the primary challenges that contribute to low levels of teacher confidence in efficiently using technology are the absence of training and inadequate infrastructure. The aforementioned discovery emphasizes the need for more methodical interventions in the form of ongoing training and enhanced institutional backing, such as the provision of sufficient technological resources. The correlation study revealed a substantial association between training and teacher readiness, indicating that institutional assistance played a crucial role in enhancing teacher preparedness. Thus, it is imperative to establish a strong collaboration among schools, government, and education service providers to enhance the success and efficiency of technology integration in the classroom. This work contributes to the educational literature by highlighting the importance of psychological and motivational factors in teachers' technology readiness, an area that previous research has not thoroughly explored. The reported findings improve comprehension of the various elements that contribute to teacher preparedness, thereby facilitating the enhancement of technology-based education quality. Nevertheless, this study is subject to some constraints. Firstly, this study exclusively comprises a sample from a single geographic region, so the findings may lack generalizability to the whole teacher population in Indonesia. Furthermore, the survey approach relies on the self-report of respondents, potentially influenced by their subjective interpretations and not accurately reflecting the actual situation. Furthermore, this study only assessed instructors' preparedness in terms of technical skills and institutional support, without delving into the pedagogical factors associated with the integration of technology in the learning process. To overcome these constraints, it is recommended to conduct additional studies that include a wider and more geographically diverse sample, thus increasing the representativeness of the findings. In addition, more comprehensive research methodologies such as classroom observations and in-depth interviews could be used to provide a more precise picture of teachers' use of technology in the classroom. Subsequent investigations may broaden the scope to include an examination of the implementation of technology in instructional methodologies and its impact on student academic achievement. It is anticipated further study to explore the role of government and commercial sector assistance in providing infrastructure and training for instructors. As a result, additional research can offer more comprehensive methodologies to improve instructors' preparedness and proficiency in using technology in the current digital age.

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