



Analyzing the Perception of Teachers Toward Using Digital Resources in Their Teaching Practices and Its Impact on Teaching Effectiveness: A Comprehensive Literature Review

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Abstract

This comprehensive literature review explores the perceptions of educators regarding digital tools in the classroom, and to what extent these perceptions affect instruction. Drawing on a selection of international studies, and recent research published from 2020 to 2024, this perspective consolidates some observations concerning the complex relationship among teacher attitudes, digital resource utilization and learning outcomes. Some of the main themes that emerged from the review are positive teacher attitudes towards digital technology integration, self-efficacy as a necessity in technology adoption, persistent barriers for successful implementation, and importance of professional development to enhancing teaching effectiveness. Results reveal that 82 percent of teachers are interested in using digital resources to teach, and over half already do so.

Keywords: digital resources, teacher perceptions, teaching effectiveness, technology acceptance, digital competence, educational technology

1. Introduction

One defining feature of teaching and learning in the twenty-first century is the incorporation of digital resources into instructional methods. Nearly every aspect of society is impacted by technology, and educational systems around the world are integrating digital competencies into their curricula and assessments. Additionally,



instructors are being urged more and more to use technology in their lessons as a means of promoting learning and formative evaluation.

The COVID-19 epidemic has sped up the development of digital technology, which has drastically changed educational environments and put conventional teaching methods to the test. It is becoming more and more important for teachers to be digitally competent as technology quickly changes the nature of education.

The effectiveness of digital integration programs is greatly influenced by teachers, who are the main agents of educational change. Their attitudes, perceptions, and skills have a big impact on how well digital resources are used to improve student learning results.

1.1 Research Problem and Significance

Studies document that technology integration is complex educational reform, and the extent to which technology are used in schools can be quite variable even when large investments have made in educational technology infrastructure and resources. The difference seriously calls into question the determinants of users' acceptance and equitable use when it comes to digital resources. Given that teachers value beliefs about the importance of technology in learning have been reported as the most proximal influencer of technology integration, it is also important to understand how they perceive digital resources. The importance of this research lies in its potential impact on both teacher development programs, institutional support structures and educational policies. TALIS 2018 highlights that the self-efficacy of teachers is much lower when it comes to using digital technologies to strokeLine (61% compared to 79%) and to foster active student contribution in the lesson.

1.2 Research Questions

In this overview of the literature, the following research questions are addressed:

1. How do educators now feel about incorporating digital resources into their lesson plans?
2. What elements affect the attitudes and use of digital resources by educators?
3. How does the efficiency of instruction get affected by teachers' opinions about digital resources?
4. What obstacles and enablers are present when integrating digital resources?
5. How does professional development affect teachers' effectiveness as educators and their level of digital competency?

1.3 Theoretical Framework

This review is based on a number of theoretical frameworks that describe how teachers use technology and how it affects the effectiveness of their instruction. Teachers'



acceptance of digital technologies can be better understood by using the Technology Acceptance Model (TAM). One method to ascertain a teacher's intentions regarding the employment of new technologies in their teaching practice is to measure user adoption of technology.

Furthermore, a fundamental paradigm for comprehending teacher skills is the Technological Pedagogical Content Knowledge (TPACK) framework. TPACK, or Technological Pedagogical Content Knowledge, is thought to be one of the most significant models for characterizing teachers' abilities to effectively use technology in the classroom.

2. Methodology

2.1 Search Strategy and Selection Criteria

The accepted principles for thorough research synthesis are followed in this systematic literature review. The search method focused on peer-reviewed articles published between 2020 and 2024 to ensure currency and relevance, and it used a variety of academic databases, including Web of Science, Scopus, PubMed, and ScienceDirect.

2.2 Inclusion and Exclusion Criteria

Inclusion Criteria:

Peer-reviewed empirical research from 2020 to 2024 Studies that concentrate on how educators see digital resources Research investigating how digital technology affects the efficacy of instruction Studies carried out in K–12 and postsecondary educational settings Research that has been published in English.

Exclusion Criteria:

Non-empirical research (comments, opinion pieces) Research concentrating exclusively on the viewpoints of students Studies released prior to 2020 Non-English-language books Research with inadequate methodological rigor.

2.3 Data Extraction and Analysis

The data extraction approach focused on several key issues, including teacher perspectives, digital competency measurements, facilitators and barriers, the impact of professional development, and instructional effectiveness outcomes. The study employed a theme synthesis technique to identify patterns and linkages among the different studies.

3. Literature Review

3.1 Teachers' Current Perceptions Toward Digital Resources

According to recent studies, instructors' opinions regarding the integration of digital resources are largely favorable. According to the results, 82% of educators are interested



in using digital technology to teach young kids, and over 50% of them use it to help pupils learn new skills on a weekly basis. This research shows that teacher attitudes have fundamentally changed, going from opposition to acceptance and excitement for digital integration.

Perceptions, however, varied greatly among teacher demographics and situations. Teachers have a somewhat positive attitude about online learning, indicating that they are willing to adopt this teaching style, and they are technologically proficient, demonstrating that they are skilled at using technology to teach.

Important subtleties in teacher views are also shown by the investigation. The need for internal support and focused professional development interventions is highlighted by the fact that, despite their generally positive views about the potential of AI in education, teachers' AI self-efficacy varies greatly depending on their prior experience with the technology, how relevant they believe it to be, and the resources they have access to.

3.2 Factors Influencing Teachers' Digital Resource Adoption

3.2.1 Self-Efficacy and Confidence

One important factor influencing the uptake and successful application of digital resources is teacher self-efficacy. ICT literacy, teacher self-efficacy, and positive experience have indirect effects on changes in teachers' ICT use for teaching, whereas support and technology integration self-efficacy have direct effects. Teachers' positive teaching experiences are linked to their self-reported changes in technology use and their technology integration self-efficacy.

Research demonstrating that there are positive and significant relationships between teachers' beliefs about their digital competence and their beliefs about the ease of use and perceived usefulness of technology in teaching, which positively correlate with technology use intention, further supports the relationship between self-efficacy and technology acceptance.

3.2.2 Perceived Usefulness and Ease of Use

The elements influencing teachers' adoption of digital materials can be better understood thanks to the Technology Acceptance Model. The findings demonstrate that successfully raising teachers' behavioral intention to utilize GenAI tools requires promoting their attitude, perceived usefulness, and self-efficacy. This result holds true for many digital technology kinds and educational settings.

Teachers' intentions to use digital tools in vocational education are sufficiently explained by the TAM, which also shows positive and significant relationships between teachers'



perceptions of their own digital competency and their perceptions of the usability and ease of use of technology in the classroom.

3.2.3 Contextual and Professional Aspects

Teachers' opinions and use of digital resources are greatly influenced by the administrative support and school atmosphere. In addition to their own experiences, opinions, and convictions, teachers' adoption of technology and good teaching techniques is also influenced by the school setting in which they work as well as the larger educational landscape. whereas school support is positively correlated with successful digital teaching and learning at schools, teachers' technology-related teaching skills are essential for various forms of students' active learning, whereas the digital technology equipment provided in a school is less significant.

3.3 Impact on Teaching Effectiveness

3.3.1 Direct Effects on Teaching Quality

Effective use of digital resources and the quality of instruction are positively correlated, according to research. Research demonstrates connections between teachers' digital proficiency and students' self-perceptions of their education, with favorable correlations between instructors' digital proficiency and their influence on students' learning. These findings have consequences for academic institutions and policymakers to guarantee the effectiveness and caliber of digitalization.

The influence goes beyond simple technological use and includes educational change. The term "teaching effectiveness" refers to the teacher's capacity to improve instruction through classroom activities that show up in students' cognitive, which improves their comprehension of the material; emotional, which piques their interest in learning; and outcome, which improves academic performance.

3.3.2 Student Learning Outcomes

Integration of digital resources has quantifiable effects on student performance and engagement. The program had a statistically significant effect on students' performance in mathematics, according to data gathered from 1727 middle school students in an experiment where teachers were randomly assigned to a computerized professional development program. This suggests that integrating automated, interactive feedback tools backed by artificial intelligence could result in efficient, scalable teacher professional development.



However, there is a complicated and context-dependent link between student results and the usage of digital resources. Concerns with digital distractions are raised by the poor utilization patterns of digital resources for language, math, and science study, with a sizable percentage of students hardly ever using these resources for academic purposes.

3.3.3 Teacher Well-being and Professional Growth

3.4.1 Persistent Barriers

Effective integration of digital resources is still hampered by major obstacles, notwithstanding favorable perceptions. These frequently include instructors' lack of pedagogical and topic expertise, inadequate preparation time, challenges with lesson planning and student learning evaluation, insufficient teaching experience, low teacher participation in training, and a lack of assessment-related tools and knowledge.

Many schools find it difficult to integrate AI into basic education, especially when there are no clear curriculum requirements and teachers have little experience to technology.

Teachers' internal and external restrictions have a big impact on teaching methods.

In many situations, infrastructure and access problems still exist. According to reviews, there are 29 obstacles to promoting technology integration in rural schools. One of these is the digital divide between urban and rural schools, which makes efforts to advance technology integration in education more difficult and exacerbates educational inequality.

3.4.2 Key Facilitators

A number of crucial enablers that promote effective digital integration have been identified by research. The perception of digital technology as a facilitator of all students' participation in reading and writing education is positively correlated with teachers' perceived knowledge of managing digital technology. Teachers who believe that digital technology facilitates all students' participation in reading and writing education report using it more frequently to promote different skills.

One important facilitator that comes to mind is professional growth. Teachers can overcome obstacles to technology integration by improving their confidence and technological skills through in-service professional development opportunities. Technology-enabled TPD programs can help teachers acquire the information and abilities necessary for high-quality instruction as well as establish settings that encourage teacher collaboration and active learning.

Leadership and assistance from the administration are also essential. Teachers who have a clear administrative vision for technology use are less likely to give up on integrating



technology when they face obstacles, and their perceptions of the benefits and challenges of doing so affect whether or not they use technology in the classroom.

3.5 Professional Development and Digital Competence

3.5.1 Effective Professional Development Models

Several successful strategies for professional development for digital competency have been identified by research. Research divides approaches to professional development into three primary categories: direct, integrated, and modeling. It suggests that teacher educators prioritize digital professional development, update their curricula, address the efficacy of course design, and improve both direct and integrated approaches.

Virtual coaching, social messaging, blended learning, video-stimulated reflection, and the use of subject-specific software/applications are all promising, locally-contextualized types of technology-mediated TPD. For maximum success, facilitators or knowledgeable peers play a critical role.

3.5.2 TPACK-Based Development

Programs for professional development have a strong foundation thanks to the TPACK framework. Pre-service teachers who participated in TPACK-module courses learned more TPACK than those who did not. There were notable impacts on pre-service teachers' perceived support for technology integration and technology-related self-efficacy, and the effectiveness was explained by the support they received.

Strong model fit and validity are demonstrated by studies that attempt to adapt and validate AI-integrated Technological Pedagogical Content Knowledge (AI-TPACK) scales. Structural equation modeling reveals significant predictive relationships among constructs, confirming the adapted AI-TPACK scale as a valid instrument for evaluating AI-integrated pedagogical competencies.

3.5.3 Measurement and Assessment Challenges

A major obstacle in the field is still measuring TPACK and digital competency. Many of the TPACK framework's recurrent theoretical or methodological problems are still unsolved, necessitating research to both clarify the idea of professional knowledge and account for the complex, situated, and dynamic nature of TPACK. This calls for improved operationalization of knowledge, more experimental and longitudinal studies, and thorough measurement.

The most common approach for evaluating TPACK is self-report surveys, which, in addition to their inherent methodological flaws, have limits pertaining to the reliability, validity, or usefulness of currently available tools.



4. Discussion

4.1 Synthesis of Key Findings

A complex but generally positive environment regarding teachers' opinions of digital tools and their influence on classroom effectiveness is revealed by this thorough literature study. With the majority of educators indicating interest in and willingness to use digital technologies into their teaching practices, the evidence points to a fundamental shift in teacher attitudes.

There are several interrelated factors that influence the complex interaction between teacher perceptions, digital competency, and teaching effectiveness. A crucial mediating factor that affects both the uptake of digital resources and the caliber of their application is self-efficacy. This result supports social cognitive theory and emphasizes how crucial confidence-boosting strategies are to professional development initiatives.

4.2 Theoretical Implications

The results validate and broaden current theoretical frameworks, especially the TPACK and Technology Acceptance Model frameworks. According to the research, self-efficacy, institutional support, and contextual factors are important in determining successful implementation, even while TAM components (perceived utility and ease of use) are still relevant.

Despite ongoing difficulties with operationalization and measurement, the TPACK framework remains a useful lens through which to view teacher skills. The framework's ongoing applicability and flexibility in emerging technology environments is indicated by the rise of AI-TPACK and other expansions.

4.3 Practical Implications

4.3.1 For Educational Institutions

Universities and colleges must realize that favorable teacher perceptions alone won't be required for digital integration to be a success. The findings highlight the vital significance of assisting educators in improving their technology skills while providing equitable access to digital resources, since both likely to be vital factors for seamless integration.

Professional development programs should include ongoing guidance and the development of self-efficacy rather than concentrating on one-time training events. Successful programs include technical skill development, ongoing mentoring, and instructional guidance, according to the research.

4.3.2 For Policymakers



Systemic obstacles to digital integration should be addressed by policymakers, especially in environments with limited resources. To improve educational fairness and close gaps, policymakers and educators should address differences in how digital resources are used, especially in settings with limited resources. The data indicates that rather than concentrating on discrete technology procurement projects, policy initiatives should concentrate on developing supportive ecosystems that comprise infrastructure, professional development, and continuing support networks.

4.3.3 For Teacher Education Programs

Rather than addressing digital competency development as a stand-alone subject, teacher education programs should incorporate technology into their whole curriculum. According to research, teacher educators' modeling has a greater impact on preservice teachers' overall digital competence than both direct and integrated approaches. Recommendations include giving teacher educators' digital professional development top priority and updating curricula.

4.4 Limitations and Future Research Directions

This review reveals a number of limitations. First, study findings may quickly become out of date due to the rapid pace of technological progress. Second, the majority of research uses self-report measures, which could not be an accurate representation of real teaching methods. Third, there is a dearth of long-term studies investigating the long-term effects of digital integration on the efficacy of instruction.

Future studies ought to concentrate on:

1. **Longitudinal Studies:** Monitoring the long-term effects of integrating digital resources on student outcomes and teacher development.
2. **Objective Measures:** Creating and verifying objective assessments of teaching efficacy and digital competency to supplement self-report tools.
3. **Context-Specific Research:** Analyzing how institutional, cultural, and economic factors affect teachers' perceptions and the success of their implementation.
4. **Student Perspective Integration:** Research on the efficacy of digital integration should more methodically incorporate student perspectives and results.
5. **Emerging Technologies:** Examining how teachers view and use virtual reality, artificial intelligence, and other cutting-edge technologies.

5. Conclusion

According to this thorough literature study, most educators say they are willing to incorporate technology into their teaching methods, and teachers' opinions on digital tools have grown more favorable. Positive perceptions are still difficult to translate into



effective practice, though, because they are impacted by a number of interrelated elements.

The data shows that, when done right, integrating digital resources can have a big impact on how successful instruction is. Teacher self-efficacy, institutional support, adequate professional development, and removing systemic obstacles are important success elements. Digital competency mediates the relationship between teacher perceptions and instructional effectiveness, with self-efficacy being a particularly important factor.

One important tool for improving teacher views and effectiveness is professional development. Programs that are effective should be ongoing, context-specific, and emphasize developing confidence in addition to technical skills. Although more improvement of measuring techniques is required, the TPACK framework offers a useful basis for such progress.

In the future, the discipline will need to deal with enduring issues including the digital divide, the caliber of professional development, and the speed at which technology is developing. Coordinated efforts at several levels of educational systems—from individual instructors to institutional regulations and wider public support—are necessary for successful digital integration.

Beyond the immediate educational results, this research raises more general issues of educational justice, teacher preparation, and the future of education in a society that is becoming more and more digital. Realizing the revolutionary potential of educational technology will depend on our ability to comprehend and support teachers' views and competencies as digital technologies continue to advance.

This review adds to the increasing amount of data demonstrating the value of teacher-centered strategies for integrating digital technology. Successful digital transformation in education necessitates ongoing attention to teacher perspectives, competencies, and well-being rather than only concentrating on technology features or student outcomes. The results serve as a basis for evidence-based decision-making in the areas of professional development, institutional support systems, and educational policy.

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