International Journal of Trend in Scientific Research and Development (IJTSRD)
Volume 10 Issue 3, May-Jun 2026 Available Online: www.ijtsrd.com e-ISSN: 2456 – 6470

Teachers' Attitude Towards the Use of Digital Tools in Online Classes: A Theoretical Perspective

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ABSTRACT

The integration of digital tools into education has significantly transformed teaching-learning processes, particularly in the context of online classes. While technological advancements have expanded access, flexibility, and innovation in pedagogy, the effectiveness of online education largely depends on teachers, whose attitudes play a decisive role in shaping instructional practices (Ertmer & Ottenbreit-Leftwich, 2010).

This theoretical paper critically examines teachers' attitudes towards digital tools through psychological, pedagogical, and technological perspectives. Drawing upon established frameworks such as the Technology Acceptance Model (Davis, 1989), the Theory of Planned Behavior (Ajzen, 1991), the TPACK framework (Mishra & Koehler, 2006), and Constructivist Learning Theory (Piaget, 1972), the paper explores the multidimensional nature of teachers' attitudes and their determinants.

It further analyzes key influencing factors, pedagogical implications, and persistent challenges such as technostress, digital inequality, and contextual constraints (Tarafdar et al., 2015; UNESCO, 2021). The paper argues for a holistic, dynamic, and context-sensitive understanding of teachers' attitudes and emphasizes the need for sustained institutional support, continuous professional development, and policy interventions to ensure meaningful and sustainable integration of digital tools in education.

KEYWORDS: *Teachers' attitude, digital tools, online classes, educational technology, theoretical perspective.*

How to cite this paper: Dr. Shaista Ateeque "Teachers' Attitude Towards the Use of Digital Tools in Online Classes: A Theoretical Perspective" Published in International Journal of Trend in Scientific Research and Development (ijtsrd), ISSN: 2456-6470, Volume-10 | Issue-3, June 2026, pp.106-112, URL: www.ijtsrd.com/papers/ijtsrd125221.pdf

IJTSRD125221

INTRODUCTION

The rapid advancement of Information and Communication Technology (ICT) has brought about a significant paradigm shift in the field of education. Traditional models of teaching and learning, which were largely confined to physical classrooms and face-to-face interactions, have progressively evolved into more flexible, dynamic, and technology-mediated environments (Selwyn, 2016; Dhawan, 2020). The integration of digital tools has enabled the expansion of education beyond geographical boundaries, thereby offering new opportunities for access, inclusivity, and pedagogical innovation.

Digital tools-including Learning Management Systems (LMS), video conferencing platforms, multimedia resources, cloud-based collaboration tools, and online assessment systems-have become essential components of contemporary educational practice. The COVID-19 pandemic further accelerated this transition, compelling educational institutions worldwide to adopt online teaching as a primary mode of instruction (Hodges et al., 2020). This unprecedented shift not only demonstrated the potential of digital education but also exposed its inherent limitations and challenges (Alieto et al., 2024).

However, the success of online education is not determined solely by the availability or accessibility of digital technologies. Rather, it depends significantly on the human factors involved in their implementation, particularly teachers' attitudes (Ertmer & Ottenbreit-Leftwich, 2010). Teachers are not passive recipients of technology; instead, they function as active agents who interpret, adapt, and

implement digital tools within their specific pedagogical and contextual settings.

Teachers' attitudes towards digital tools play a crucial role in influencing their willingness to adopt new technologies, experiment with innovative teaching methods, and engage students in meaningful and interactive learning experiences. Positive attitudes tend to foster creativity, flexibility, and learner-centered approaches, whereas negative attitudes may result in resistance, anxiety, and limited or superficial use of technology (Clipa et al., 2023; Teo, 2011).

Given the central role of teachers in the educational process, it becomes essential to examine their attitudes towards digital tools from a robust theoretical perspective. Such an analysis not only enhances the understanding of technology integration in education but also provides valuable insights for improving teacher training programs, strengthening institutional support systems, and informing educational policy frameworks. Therefore, this paper aims to explore teachers' attitudes through established theoretical frameworks, identify key influencing factors, and highlight the implications and challenges associated with the use of digital tools in online classes.

Concept of Attitude in Education

Attitude is a fundamental construct in educational psychology, representing a relatively stable yet dynamic predisposition that influences how individuals perceive and respond to various aspects of their environment (Ajzen, 1991). It is shaped by a combination of personal experiences, social interactions, cultural influences, and professional practices, making it a complex and multifaceted phenomenon within educational contexts.

In the context of teaching, attitude plays a crucial role in shaping instructional behavior, classroom management, and responsiveness to innovation (Ertmer, 2005). Teachers' attitudes towards digital tools are particularly significant in the digital era, as they directly influence the extent to which technology is meaningfully integrated into teaching and learning processes (Teo, 2011).

Attitude is commonly conceptualized as comprising three interrelated components: cognitive, affective, and behavioral (Rosenberg & Hovland, 1960). The cognitive component includes beliefs, perceptions, and knowledge about digital tools. Teachers form judgments about the usefulness, relevance, and effectiveness of technology in enhancing teaching and learning. These beliefs are often influenced by prior experiences, professional training, and exposure to technological environments (Davis, 1989).

The affective component refers to emotional responses associated with technology use. Teachers may experience positive emotions such as enthusiasm, curiosity, and confidence, or negative emotions such as anxiety, frustration, and resistance. These emotional responses significantly influence motivation and willingness to engage with digital tools (Tarafdar et al., 2015).

The behavioral component reflects teachers' actions and intentions, including their readiness to adopt digital tools, experiment with new teaching strategies, and sustain their use over time. The interaction between cognitive beliefs and emotional responses plays a decisive role in shaping behavioral tendencies toward technology integration (Ajzen, 1991).

Importantly, these components are interconnected and mutually reinforcing. A teacher who believes in the effectiveness of digital tools and feels confident in using them is more likely to integrate them effectively into teaching practices. Conversely, negative beliefs and emotions may hinder technology adoption and limit pedagogical innovation.

Understanding the multidimensional nature of attitude is essential for designing interventions that promote positive engagement with digital technologies and support effective online teaching (Sangrà et al., 2024; Ertmer & Ottenbreit-Leftwich, 2010).

Digital Tools in Online Classes: An Attitude-Centered Perspective

Digital tools have become the backbone of online education, providing the necessary infrastructure for communication, collaboration, content delivery, and assessment (Dhawan, 2020). These tools include Learning Management Systems (LMS) platforms such as Moodle and Google Classroom, video conferencing tools like Zoom and Microsoft Teams, digital whiteboards, multimedia presentations, and data-driven assessment systems, all of which play a crucial role in facilitating effective online teaching and learning environments (Hodges et al., 2020).

However, the effectiveness of digital tools is not inherent; rather, it depends largely on how they are utilized by teachers. From an attitude-centered perspective, technology is not a neutral entity but is actively shaped by teachers' beliefs, perceptions, and pedagogical orientations (Ertmer, 2005). This perspective emphasizes that the value of digital tools lies not merely in their availability but in the ways teachers interpret and integrate them into instructional practices.

Teachers serve as mediators between technology and learners. Their attitudes determine whether digital tools are used as simple substitutes for traditional

teaching methods or as transformative resources that enhance learning experiences (Puentedura, 2006). Teachers with positive attitudes are more likely to adopt innovative practices, such as collaborative learning, interactive discussions, and problem-based learning. They use digital tools to create engaging and learner-centered environments that promote active participation, deeper understanding, and critical thinking (Koehler et al., 2013).

In contrast, teachers with negative attitudes may perceive digital tools as complex, time-consuming, or incompatible with their established teaching styles. This perception often leads to limited, surface-level, or mechanical use of technology, thereby reducing its potential to improve learning outcomes (Teo, 2011).

Furthermore, teachers' attitudes significantly influence their ability to adapt to the challenges associated with online teaching. Positive attitudes foster resilience, openness, and adaptability, enabling teachers to overcome technical difficulties and continuously refine their instructional practices. Negative attitudes, on the other hand, may result in avoidance, resistance, and reduced engagement with digital innovations (Tarafdar et al., 2015).

Thus, teachers' attitudes act as a critical link between technological resources and pedagogical effectiveness. Without adequately addressing this human dimension, the integration of digital tools in education risks remaining superficial, fragmented, and ultimately unsustainable (Selwyn, 2016; Ertmer & Ottenbreit-Leftwich, 2010).

Theoretical Foundations Explaining Teachers' Attitudes

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) provides a foundational framework for understanding how individuals develop attitudes towards technology and decide whether to adopt it (Davis, 1989). According to TAM, two key variables-perceived usefulness and perceived ease of use-play a central role in shaping attitudes towards technology.

Perceived usefulness refers to the degree to which teachers believe that digital tools enhance their teaching effectiveness. This includes improving student engagement, facilitating interactive learning, enabling efficient assessment, and supporting diverse learning needs. When teachers perceive digital tools as beneficial, they are more likely to develop positive attitudes and integrate them into their teaching practices (Davis, 1989; Venkatesh & Davis, 2000).

Perceived ease of use refers to the extent to which teachers believe that digital tools are user-friendly and require minimal effort. Technologies that are intuitive and accessible reduce cognitive load and increase confidence, thereby promoting positive attitudes. Conversely, complex and technically demanding tools may lead to frustration and resistance (Venkatesh et al., 2003).

TAM also acknowledges the role of external variables such as training, institutional support, and prior experience, which influence teachers' perceptions and attitudes toward technology use (Venkatesh et al., 2003; Education and Information Technologies, 2025).

Theory of Planned Behavior (TPB)

The Theory of Planned Behavior explains the relationship between attitudes, intentions, and behavior. According to this theory, teachers' intention to use digital tools is influenced by their attitudes, subjective norms, and perceived behavioral control (Ajzen, 1991).

Subjective norms refer to social pressures from colleagues, administrators, and institutions that may encourage or discourage the use of digital tools. Perceived behavioral control reflects teachers' confidence in their ability to use technology effectively, including their access to resources and skills required for implementation. These factors collectively shape teachers' attitudes and significantly influence their actual behavior in technology integration (Ajzen, 1991; Teo, 2011).

Technological Pedagogical Content Knowledge (TPACK)

The TPACK framework emphasizes the integration of technology, pedagogy, and content knowledge as essential components of effective teaching. It highlights that successful technology integration requires not only technical skills but also an understanding of how technology aligns with pedagogical strategies and subject content (Mishra & Koehler, 2006).

Teachers who possess strong TPACK are better equipped to use digital tools in meaningful and contextually appropriate ways. This competence enhances their confidence and leads to more positive attitudes towards digital tools, ultimately promoting effective and innovative teaching practices (Koehler et al., 2013).

Constructivist Learning Theory

Constructivist Learning Theory views learning as an active, constructive, and collaborative process in which learners build knowledge through interaction and experience (Piaget, 1972; Vygotsky, 1978). This perspective emphasizes the role of the learner as an active participant rather than a passive recipient of information.

Digital tools support constructivist approaches by enabling interaction, discussion, collaboration, and experiential learning. Features such as discussion forums, virtual simulations, and collaborative platforms allow learners to engage deeply with content and with one another. Teachers who hold constructivist beliefs are more likely to embrace digital tools positively, as these tools align with their pedagogical philosophy and enhance learner-centered practices (Jonassen, 1999).

Integrative Perspective

Taken together, these theoretical frameworks demonstrate that teachers' attitudes are shaped by a complex interplay of cognitive beliefs, social influences, professional knowledge, and pedagogical values (Ajzen, 1991; Mishra & Koehler, 2006). Rather than being determined by a single factor, attitudes emerge from the interaction between individual perceptions, institutional contexts, and technological competencies.

This multidimensional perspective highlights that teachers' engagement with digital tools is influenced not only by perceived usefulness and ease of use, but also by social expectations, self-efficacy, and their ability to integrate technology effectively into teaching practices (Venkatesh et al., 2003; Ertmer & Ottenbreit-Leftwich, 2010).

Therefore, understanding teachers' attitudes requires a holistic approach that considers psychological, social, and contextual dimensions. Such an approach is essential for designing effective interventions that promote positive attitudes and sustainable integration of digital tools in education.

Factors Influencing Teachers' Attitudes Towards Digital Tools

Teachers' attitudes towards digital tools are shaped by a complex interaction of individual competencies, institutional conditions, and contextual realities (Ertmer & Ottenbreit-Leftwich, 2010). These factors collectively determine how teachers perceive, adopt, and utilize digital technologies in online teaching environments.

Digital literacy is a foundational factor influencing teachers' attitudes. Teachers with strong technological skills are more confident and willing to experiment with digital tools, thereby enhancing their teaching practices. In contrast, limited digital literacy often leads to anxiety, uncertainty, and resistance toward technology use (Ng, 2012).

Professional training plays a crucial role in shaping attitudes. Continuous professional development programs that focus on both technical and pedagogical aspects of digital tools help teachers develop confidence and competence. Such training reduces uncertainty, enhances self-efficacy, and promotes positive attitudes toward technology integration (Koehler et al., 2013).

Institutional support and infrastructure significantly affect teachers' attitudes. Access to reliable internet connectivity, digital devices, and technical support creates a conducive environment for effective online teaching. Conversely, the lack of such support often leads to frustration, stress, and negative perceptions of digital tools (Hodges et al., 2020).

Workload and time management are also important factors influencing teachers' attitudes. Online teaching requires additional time for lesson planning, content creation, and assessment design. Without adequate institutional support and workload management strategies, this increased demand may negatively impact teachers' attitudes and reduce their motivation to use digital tools effectively (Dhawan, 2020).

Finally, student engagement and learning outcomes play a significant role in shaping teachers' perceptions. Positive student responses, active participation, and improved learning outcomes reinforce favorable attitudes toward digital tools. In contrast, low levels of engagement or ineffective learning experiences may discourage teachers and lead to reduced use of technology (Teo, 2011).

Implications for Online Teaching and Learning

Teachers' positive attitudes towards digital tools play a significant role in improving instructional design in online classes. When teachers perceive digital tools as useful and manageable, they are more likely to plan lessons that extend beyond traditional lecture-based methods. They incorporate multimedia resources, interactive presentations, virtual demonstrations, and collaborative tasks that make learning more engaging and meaningful. Such innovative instructional practices help address diverse learning needs and enhance students' conceptual understanding (Koehler et al., 2013).

A positive attitude towards digital tools also enables teachers to create interactive and supportive online learning environments. Teachers who are comfortable with technology actively use discussion forums, live chats, breakout rooms, polls, and quizzes to encourage student participation. These interactive practices reduce the sense of isolation often experienced in online learning and promote communication and collaboration among students. Effective interaction further strengthens teacher-student relationships and enhances overall learning experiences (Dhawan, 2020).

Moreover, teachers' attitudes towards digital tools directly influence the quality of communication in online classes. Teachers with favorable attitudes utilize digital platforms to provide timely feedback, clarify doubts, and maintain consistent contact with students. Tools such as emails, messaging platforms, and learning management systems enable teachers to monitor student progress and respond to individual learning needs. Such effective communication enhances students' motivation and supports continuous and self-directed learning (Hodges et al., 2020).

Positive attitudes towards digital tools also encourage teachers to engage in continuous professional development. Teachers who value technology are more willing to learn new digital skills, experiment with innovative teaching strategies, and adapt to evolving educational environments. This commitment to lifelong learning improves teachers' confidence and competence, ultimately leading to greater teaching effectiveness in online contexts (Ertmer & Ottenbreit-Leftwich, 2010).

Furthermore, teachers with positive attitudes are more likely to support and adopt blended learning models that combine online and face-to-face instruction. Blended learning enables the integration of digital resources with classroom teaching, offering greater flexibility and personalized learning opportunities. Such approaches enhance instructional effectiveness by making learning more accessible, adaptive, and learner-centered (Graham, 2013).

In addition, teacher education programs play a crucial role in shaping teachers' attitudes towards digital tools. These programs need to focus on developing both technological competence and positive attitudes by integrating digital pedagogy into the curriculum. Hands-on training, practical exposure, and reflective activities help teachers understand the pedagogical value of digital tools and build confidence in their effective use (Mishra & Koehler, 2006).

Finally, supportive institutional policies and administrative encouragement are essential for the sustainable integration of digital tools in online teaching. Institutions must provide adequate infrastructure, technical support, and continuous professional development opportunities. Recognition of teachers' efforts, along with appropriate workload adjustments, further strengthens positive attitudes. When teachers feel supported within their institutional environment, they are more likely to adopt digital tools effectively and contribute to the long-term success of online education (Selwyn, 2016).

Challenges and Theoretical Gaps

One of the major challenges affecting teachers' attitudes towards digital tools is the digital divide. Unequal access to digital devices, reliable internet connectivity, and technological resources creates significant barriers for teachers, particularly in rural and economically disadvantaged areas. When teachers lack access to essential infrastructure, they often experience frustration and helplessness, which negatively influences their attitudes towards online teaching. This inequality limits the effective implementation of digital tools despite teachers' willingness to adopt technology (Selwyn, 2016; UNESCO, 2021).

The continuous use of digital tools in online teaching also leads to technostress among teachers. Managing virtual classrooms, addressing technical problems, and adapting to new platforms place considerable mental and emotional pressure on educators. Extended screen time, blurred boundaries between work and personal life, and expectations of constant availability further contribute to stress and burnout. These emotional challenges are often overlooked in theoretical models that emphasize technical acceptance but fail to adequately address teachers' well-being (Tarafdar et al., 2015).

In addition, online teaching requires substantial time for lesson planning, content creation, monitoring student progress, and conducting assessments. Many teachers perceive digital teaching as more time-consuming than traditional classroom instruction. Without proper workload management and institutional support, this increased burden can negatively affect teachers' attitudes towards digital tools. Existing theoretical frameworks frequently underestimate the practical challenges related to time, effort, and workload associated with online teaching (Dhawan, 2020).

Resistance to pedagogical change is another significant challenge. Some teachers demonstrate reluctance in adopting digital tools due to deeply rooted beliefs in traditional teaching methods. This resistance is not merely technical but also pedagogical and cultural in nature. Teachers may feel that digital tools weaken personal interaction, classroom discipline, and the effectiveness of face-to-face teaching. Current theoretical frameworks do not sufficiently explain these emotional and cultural dimensions of resistance, resulting in an incomplete understanding of teachers' attitudes (Ertmer, 2005).

Furthermore, most theories explaining technology acceptance, such as the Technology Acceptance Model and the Theory of Planned Behavior, primarily focus on individual beliefs and intentions. These

models often neglect broader socio-cultural, institutional, and economic contexts that shape teachers' attitudes. Factors such as institutional policies, cultural norms, and regional disparities remain insufficiently addressed, particularly in the context of developing countries (Venkatesh et al., 2003).

Another limitation is the lack of long-term and holistic perspectives in existing research. Many studies emphasize short-term adoption of digital tools rather than their sustained use over time. They often fail to examine how teachers' attitudes evolve through experience, professional development, and changing educational environments. There is a clear need for comprehensive theoretical frameworks that integrate psychological, pedagogical, emotional, and contextual dimensions to provide a deeper understanding of teachers' attitudes (Ertmer & Ottenbreit-Leftwich, 2010).

These theoretical gaps highlight the need for context-sensitive models that reflect the realities of diverse educational settings. Teachers' attitudes are shaped not only by personal beliefs but also by systemic factors such as policy support, institutional culture, and social expectations. Developing inclusive and flexible theoretical frameworks is therefore essential for addressing these complexities and facilitating the effective and sustainable integration of digital tools in online education.

Conclusion

Teachers' attitudes towards the use of digital tools in online classes emerge as a decisive factor in determining the quality, effectiveness, and sustainability of online education. This paper firmly positions teachers' attitude as a central theoretical construct that mediates the relationship between the availability of digital technologies and their pedagogical impact. The presence of advanced technological infrastructure alone cannot transform teaching and learning; it is the attitudes of teachers that ultimately determine whether digital tools are used as superficial substitutes for traditional instruction or as transformative instruments that enrich learning experiences.

Drawing upon psychological, pedagogical, and technological theoretical perspectives, this study demonstrates that a complex and dynamic interplay of cognitive beliefs, emotional responses, professional competence, and contextual conditions shapes teachers' attitudes. Teachers' perceptions of usefulness and ease of use, their confidence or anxiety towards technology, their ability to integrate technology with pedagogy and content, and the institutional and socio-cultural environments in which they operate collectively influence their instructional decisions and practices in online and blended learning contexts. These factors not only affect teachers' willingness to adopt digital tools but also determine the depth, creativity, and pedagogical meaningfulness of technology integration.

The analysis further emphasizes that positive attitudes towards digital tools are not innate but must be systematically cultivated. Comprehensive professional training that integrates technological skills with pedagogical understanding, continuous institutional support, adequate infrastructure, and inclusive, context-sensitive educational policies are essential for nurturing favorable teacher attitudes. When teachers are empowered through support and professional recognition, they are more likely to engage in reflective practice, pedagogical innovation, and learner-centered online instruction.

In conclusion, strengthening teachers' attitudes towards digital tools must be recognized as a strategic priority for educational systems aiming to enhance the quality of online and blended education. By foregrounding teachers' attitudes as both a theoretical and practical foundation for effective technology integration, this paper contributes to a deeper understanding of how digital tools can be transformed into meaningful educational resources. Addressing teachers' attitudes holistically is therefore crucial for ensuring equitable, effective, and sustainable digital education in an increasingly technology-driven educational landscape.

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