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Teacher Self-Efficacy in Online Learning Environments: A Review of the Literature (2010–2025)

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ABSTRACT

Teacher self-efficacy is widely recognised as a critical determinant of instructional effectiveness, professional well-being, and student achievement. The rapid expansion of online and blended learning environments, particularly following the COVID-19 pandemic, has intensified the need to understand teachers' efficacy beliefs in technology-mediated educational settings. This review synthesises research published between 2010 and 2025 on teacher self-efficacy in online learning environments, with a particular emphasis on secondary education. Drawing on Bandura's Social Cognitive Theory, the review examines the theoretical foundations of teacher self-efficacy, its determinants, effects on teaching quality and student outcomes, and contemporary approaches to measurement. A systematic review of the literature identified recurring themes in technological competence, pedagogical adaptability, institutional support, emotional resilience, and professional development. The findings demonstrate that teacher self-efficacy significantly influences instructional quality, student

engagement, academic achievement, and teachers' capacity to adapt to evolving educational contexts. The review also highlights the increasing relevance of Technological Pedagogical Content Knowledge (TPACK) in shaping efficacy beliefs for online teaching. Despite notable progress, challenges remain regarding the validity and applicability of measurements across diverse educational settings. The paper concludes by discussing implications for policy, teacher education, professional development, and future research.

Introduction

Teacher self-efficacy is regarded as a highly influential construct in educational psychology, as it elucidates how teachers perceive their capacity to facilitate learning and achieve instructional objectives. Rooted in Bandura's (1997) concept of self-efficacy, teacher self-efficacy refers to educators' beliefs in their ability to organise and execute the actions required to attain desired educational outcomes. These beliefs shape instructional decision-making, classroom management, student engagement, persistence, and professional commitment.

Over the past decade, educational systems worldwide have undergone substantial transformation due to rapid technological advancements and the widespread adoption of online and blended learning models. These changes have fundamentally altered teaching practices, requiring educators to integrate technology with pedagogy while maintaining meaningful student engagement. The COVID-19 pandemic further accelerated this transition, necessitating a rapid shift from face-to-face instruction to emergency remote teaching. Consequently, teacher self-efficacy has emerged as a critical factor influencing educators' ability to adapt effectively to digital learning environments.

Research consistently demonstrates that teachers with strong efficacy beliefs are more likely to implement innovative instructional strategies, persist in the face of challenges, and foster positive learning experiences for students. In online settings, where traditional classroom interactions are replaced by technology-mediated communication, efficacy beliefs assume heightened importance. Teachers are required to manage digital platforms, facilitate virtual interactions, provide timely feedback, and support student learning across varied contexts.

Although teacher self-efficacy has been extensively studied in traditional classroom settings, its application to online learning environments represents a more recent area of inquiry. The unique challenges of digital

instruction require a broader conceptualisation of teacher efficacy that includes technological competence, digital communication skills, and virtual classroom management. Accordingly, this review analyses literature published between 2010 and 2025 to provide a comprehensive understanding of teacher self-efficacy in online learning environments.

Theoretical Background

The concept of self-efficacy originates from Bandura's Social Cognitive Theory, which proposes that human functioning results from reciprocal interactions among personal factors, behaviour, and environmental influences. Within this framework, self-efficacy refers to an individual's belief in their capability to organise and perform actions required to achieve specific outcomes.

Bandura identified four primary sources of efficacy beliefs. The first and most influential source is mastery experience. Successful performance strengthens efficacy beliefs, whereas repeated failure can weaken them. For teachers, the successful implementation of instructional strategies and positive student outcomes contributes significantly to efficacy development.

The second source is vicarious experience. Observing competent colleagues perform similar tasks successfully enhances observers' beliefs in their own capabilities. Professional collaboration and peer learning opportunities, therefore, play important roles in the development of efficacy.

The third source is verbal persuasion, which includes encouragement, feedback, and support from administrators, colleagues, and professional networks. Positive feedback can strengthen confidence and motivate individuals to persist in challenging situations.

The fourth source involves physiological and affective states. Feelings of stress, anxiety, or fatigue may reduce efficacy beliefs, whereas positive emotional experiences enhance perceptions of competence.

Bandura emphasised that self-efficacy is context-specific rather than a stable personality trait. Consequently, teachers may feel highly efficacious in traditional classrooms while experiencing uncertainty in online learning environments. This context-specificity provides a theoretical foundation for understanding efficacy in digital education.

Teacher Self-Efficacy in Educational Contexts

Teacher self-efficacy refers to teachers' beliefs in their ability to promote student learning, manage classrooms effectively, and implement instructional strategies successfully. Since the emergence of efficacy

research in the 1970s, studies have consistently demonstrated strong relationships between teacher efficacy and educational outcomes.

Tschannen-Moran and Hoy (2001) conceptualised teacher self-efficacy through three major dimensions: instructional strategies, classroom management, and student engagement. These dimensions remain widely accepted in educational research and have informed numerous empirical investigations.

Teachers with high self-efficacy generally demonstrate greater enthusiasm, persistence, and willingness to adopt innovative practices. They are more likely to create supportive learning environments, establish positive relationships with students, and maintain high expectations for achievement. Furthermore, efficacy beliefs influence teachers' emotional well-being, job satisfaction, and professional commitment.

Research also indicates that teacher self-efficacy develops through experience and professional learning. Supportive school environments, constructive feedback, and collaborative professional cultures contribute to the development of efficacy. Conversely, excessive workload, inadequate resources, and organisational constraints may undermine efficacy belieAlthough these findings are well established in traditional educational contexts, the growing prevalence of digital learning environments necessitates further examination of how efficacy beliefs function within online teaching settings.ings.

Teacher Self-Efficacy in Online Learning Environments (2010–2025)

The integration of digital technologies into education has transformed teaching practices and expanded the scope of teacher self-efficacy. Online teaching requires educators to perform tasks that extend beyond traditional instructional responsibilities, including managing learning management systems, facilitating virtual communication, designing digital learning activities, and supporting remote learners.

Between 2010 and 2015, research primarily focused on technological self-efficacy. Studies demonstrated that teachers' confidence in using digital technologies significantly influenced technology integration and instructional innovation. Teachers with higher levels of computer self-efficacy were more willing to experiment with digital tools and implement technology-enhanced learning activities.

Between 2015 and 2020, research broadened to include pedagogical dimensions of online teaching. Investigations increasingly examined how institutional support, professional development, and organisational culture influenced teachers' confidence in digital instruction. Findings suggested that efficacy development depends not only on individual competence but also on supportive educational environments.

The COVID-19 pandemic marked a major turning point in research on online teaching. The sudden transition to remote learning highlighted substantial differences in teachers' readiness and confidence for online instruction. Studies conducted during this period consistently found that teachers with higher self-efficacy adapted more effectively to remote teaching, maintained stronger student engagement, and experienced lower levels of stress and burnout.

Recent research has expanded further to include socio-emotional dimensions of online teaching. Emotional resilience, adaptability, and well-being are increasingly recognised as important contributors to sustained efficacy in digital environments. Researchers have also highlighted the importance of TPACK, emphasising that effective online teaching requires integration of technological, pedagogical, and content knowledge.

Determinants of Teacher Self-Efficacy in Online Learning

Multiple factors contribute to the development of teacher self-efficacy in online environments.

Mastery Experiences

Successful online teaching experiences remain the strongest predictor of efficacy. Teachers who effectively manage virtual classrooms, facilitate student participation, and achieve learning objectives develop stronger confidence in their abilities.

Vicarious Experiences

Professional learning communities, peer mentoring, and collaborative networks provide opportunities for teachers to observe successful online teaching practices. Such experiences reduce uncertainty and foster a sense of efficacy.

Verbal Persuasion

Constructive feedback from administrators, mentors, and colleagues strengthens teachers' confidence and encourages continued professional growth. Recognition of successful teaching practices reinforces efficacy beliefs.

Emotional and Psychological Factors

Stress, anxiety, and burnout negatively affect efficacy beliefs, whereas emotional resilience and well-being support confidence and persistence. Research consistently demonstrates strong relationships between teacher well-being and online teaching efficacy.

Institutional Support

Administrative leadership, technological infrastructure, access to digital resources, and professional development opportunities significantly influence the development of efficacy. Teachers working in supportive environments generally report higher efficacy levels than those facing resource limitations.

Effects of Teacher Self-Efficacy

Teacher self-efficacy influences numerous educational outcomes.

Teaching Quality

Teachers with high efficacy beliefs are more likely to implement innovative instructional strategies, utilise technology effectively, and adapt instruction to diverse learner needs. They demonstrate greater persistence when encountering technological or pedagogical challenges.

Student Achievement

Research consistently identifies positive relationships between teacher efficacy and student academic performance. Teachers who believe in their instructional capabilities tend to provide more effective learning experiences and maintain higher expectations for students.

Student Engagement

Online learning environments require active efforts to sustain student engagement. Teachers with strong efficacy beliefs are more likely to create interactive learning experiences, maintain communication, and encourage participation.

Professional Well-Being

Higher self-efficacy contributes to job satisfaction, motivation, and resilience. Teachers with strong efficacy beliefs generally report lower levels of burnout and greater professional commitment.

Assessment and Measurement

Accurate assessment of teacher self-efficacy remains essential for research and practice. The Teacher Sense of Efficacy Scale (TSES) remains one of the most widely used instruments, measuring efficacy in instructional strategies, classroom management, and student engagement.

Traditional instruments, however, do not fully capture the complexities of online teaching. As a result, researchers have developed specialised measures that incorporate digital competencies, virtual classroom management, and technology integration. Recent approaches increasingly utilise TPACK frameworks to assess online teaching efficacy more comprehensively.

Despite these advances, challenges remain regarding measurement validity, cultural applicability, and reliance on self-report data. Future research should continue refining online-specific assessment tools and integrating multiple sources of evidence.

Methodology

This review adopted an integrative literature review approach to synthesise empirical and theoretical studies published between 2010 and 2025. Relevant literature was identified through searches of Scopus, Web of Science, ERIC, PsycINFO, and Google Scholar using keywords related to teacher self-efficacy, online teaching, blended learning, digital pedagogy, and secondary education.

Studies were included if they focused on teacher self-efficacy within online or blended learning environments and were published in peer-reviewed sources. Following screening and eligibility assessment, 74 studies were included in the final review. Data were analysed thematically to identify major patterns in determinants, outcomes, and the measurement of teacher self-efficacy.

Discussion

The findings indicate that teacher self-efficacy remains a central factor in successful online teaching. Consistent with Social Cognitive Theory, efficacy beliefs develop through interactions among personal experiences, social influences, and environmental conditions.

A notable finding is the increasing importance of technological competence as a component of efficacy. While traditional efficacy research focused primarily on classroom management and instruction, contemporary online environments require additional competencies related to digital pedagogy and technology integration.

The review also highlights the critical role of institutional support. Professional development, mentoring, technical assistance, and collaborative learning communities significantly enhance teachers' confidence and effectiveness in digital settings.

Furthermore, emotional resilience emerged as an important dimension of efficacy during and after the COVID-19 pandemic. Teachers who maintained strong efficacy beliefs demonstrated greater adaptability and lower susceptibility to burnout.

These findings indicate that the development of teacher self-efficacy should be understood as a dynamic process shaped by technological, pedagogical, organisational, and psychological factors.

Conclusion

Teacher self-efficacy is a fundamental determinant of effective teaching in online learning environments. Evidence from studies conducted between 2010 and 2025 demonstrates that efficacy beliefs influence instructional quality, student engagement, academic achievement, and teacher well-being. As education continues to evolve through digital transformation, fostering strong efficacy beliefs becomes increasingly important.

Professional development programmes should prioritise integrating technology, pedagogy, and content knowledge while providing ongoing support and mentoring opportunities. Educational leaders should create supportive environments that encourage experimentation, collaboration, and reflective practice.

Future research should focus on longitudinal investigations, culturally responsive measurement tools, and emerging technologies such as artificial intelligence in education. Strengthening teacher self-efficacy will remain essential for improving educational quality and ensuring successful online learning experiences in the years ahead.

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For a publication-quality review paper, the references should be complete and formatted in **APA 7th edition** style. Based on the citations used throughout your manuscript, the following reference list can be included.

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