

Unleashing the Power of Teacher Self-Efficacy in the Enactment of Educational Innovation

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Abstract. Teacher self-efficacy (TSE), grounded in Bandura's Social Cognitive Theory, is a key psychological construct that influences teachers' professional beliefs, behaviors, and responses to change. In contemporary educational contexts where instructional, curricular, and technological innovations are increasingly prevalent, teachers' beliefs in their own capabilities play a crucial role in shaping how such innovations are perceived, enacted, or resisted. However, despite extensive empirical research on TSE, the literature still lacks a consolidated framework explaining how task-specific efficacy beliefs dynamically interact with complex institutional and contextual factors during the implementation of multifaceted educational reforms. To address this gap, this paper employs an integrative conceptual review design, systematically drawing on established theoretical perspectives and empirical literature to synthesize existing knowledge and propose a unified conceptual model. This conceptual paper examines teacher self-efficacy and explores its significance in enacting educational innovation. Drawing on established theoretical perspectives and empirical literature, the paper first traces the conceptual development of TSE. It clarifies its defining characteristics, including its task- and context-specific nature, sources of efficacy information, and relative stability over time. Despite extensive research on teacher self-efficacy and educational innovation, a conceptual gap remains in understanding how TSE interacts with contextual and personal factors to shape teachers' responses to innovation across different educational settings. It then discusses how TSE influences teachers' attitudes towards innovation, their willingness to adopt new pedagogical and technological practices, and their persistence in managing the demands and challenges associated with educational change. The discussion highlights that while high levels of TSE often support innovation adoption, efficacy beliefs may also interact with contextual and personal factors in complex ways. The paper concludes by emphasizing the importance of embedding TSE within professional development initiatives and institutional support structures to enhance teachers' capacity to engage meaningfully with educational innovation.

Keywords: Innovation, Professionalism, Teacher Self-Efficacy

1. INTRODUCTION

Teacher self-efficacy (TSE) serves as a critical explanatory framework for understanding the considerable variation in how educators respond when instructed to modify their instructional approaches. This concept originates from Bandura's (1977, 1986) foundational research on self-efficacy and Social Cognitive Theory, which posits that individuals' convictions regarding their capacity to strategize and execute the actions necessary for task completion fundamentally influence their outcomes. These convictions determine how individuals interpret challenges, the intensity of their effort, and their persistence when confronted with adversity. Within the teaching profession, this translates to educators' assessments of their ability to engage learners effectively, implement evidence-based instructional methodologies, and maintain productive classroom environments (Tschannen-Moran & Hoy, 2001). Importantly, TSE extends beyond general professional confidence; rather, it is contingent upon the particular task at hand, an educator's prior experiences, and the organizational context in which they operate.

This consideration has become increasingly significant given the continuous evolution of educational practice. Educators are regularly expected to adopt innovative pedagogical approaches, integrate technological resources, implement curricular modifications, and address the diverse developmental needs of their student populations. Possessing knowledge and access to necessary resources proves insufficient; educators must additionally maintain confidence in their capacity to execute these initiatives successfully. Those demonstrating robust efficacy beliefs typically demonstrate greater openness to unfamiliar practices, demonstrate resilience when implementation proves challenging, and demonstrate flexibility in responding to student requirements. Conversely, educators harboring self-doubt may perceive innovation as supplementary burden or as a potential disruption to their established instructional practices. Nevertheless, the relationship between TSE and educational innovation remains multifaceted, with institutional mandates, ongoing professional development, administrative leadership, and material support all exerting substantial influence on educators' receptiveness to change.

Extensive scholarly investigation has examined TSE in connection with teaching effectiveness, behavioral management, student participation, and professional growth. Its significance within the context of educational innovation has received comparatively limited theoretical examination. A fundamental challenge lies in the tendency to conceptualize efficacy beliefs primarily as an individual psychological attribute, whereas innovation inherently encompasses organizational and environmental dimensions. This artificial separation obscures the dynamic interplay between educators' psychological convictions and the institutional contexts within which innovation initiatives unfold. An educator possessing elevated.

2. THEORETICAL OVERVIEW

2.1 The Definition of Teacher Self-Efficacy

Two theoretical cores have influenced our current understanding of TSE. Rotter's (1966) Locus of Control and Bandura's (1997) Social Cognitive Theory. In its earliest conceptualization, teacher efficacy was underpinned by Rotter's (1966) Locus of Control, which centered on whether teachers believed that internal or external

reinforcements-controlled student outcomes. One of the more influential studies using this theoretical basis was Rand Corporation's Analysis of the School Preferred Reading Program in Selected Los Angeles Minority Schools (Armor et al., 1976). In this study, teacher efficacy was hypothesized to be a composite of two separate sub-constructs, personal teaching efficacy (PTE) and general teaching efficacy (GTE). The study further defined PTE as a teacher's confidence in their ability to overcome factors that impede student learning, and GTE as teachers' "beliefs about the power of external factors compared to the influence of teachers and schools" (Tschannen-Moran et al., 1998). This conceptualization subsequently influenced the construction of teacher efficacy scales in the 1980s, including Rose and Medway's (1981) Teacher Locus of Control, Guskey's (1981) Responsibility for Student Achievement, and, to some extent, Gibson and Dembo's (1984) Teacher Efficacy Scale.

However, Bandura's (1997) SCT prompted a reappraisal of what constituted teacher efficacy. Bandura (1997) defined self-efficacy as "beliefs in one's capabilities to organize and execute courses of action required to produce attainments". He distinguished self-efficacy from outcome expectations, which was an individual's "estimate that a given behavior will lead to certain outcomes". Owing to the conceptual differences between the two theoretical strands, efforts were made within the educational circle to reconcile some of these inconsistencies. Using initial factor extraction, Gibson and Dembo (1984) found some similarities between Armor et al. (1976)'s two factors, PTE and GTE, and Bandura's (1977) efficacy expectations and outcome expectations. Despite this, questions remained about the equivalence of these factors, as subsequent studies using Gibson and Dembo's (1984) Teacher Efficacy Scale revealed a lack of congruence between them.

Through their model of teacher efficacy, Tschannen-Moran et al. (1998) sought to reconcile the two theoretical strands. They defined teacher efficacy as "the teacher's belief in his or her capability to organize and execute courses of action required to accomplish a specific teaching task in a particular context" (Tschannen-Moran et al., 1998), weighing teachers' perceived teaching competence against task requirements and teaching context. This conceptualization of teacher efficacy mirrored Bandura's (1997) understanding of self-efficacy, assuming that efficacy beliefs are task- and context-specific. Furthermore, they adopted Bandura's (1997) assumption that TE may differ in terms of "magnitude, generality, and strength. Rather than adopting Rotter's (1996) idea of control over outcomes, they posited that teacher efficacy prioritized teachers' evaluation of their teaching abilities. This paper adopts Bandura's understanding of self-efficacy, defining TSE as "individual teachers' beliefs in their own abilities to plan, organize, and carry out activities required to attain given educational goals" (Skaalvik & Skaalvik, 2007). The definition in this paper also builds upon Tschannen-Moran et al.'s (1998) conceptualization of teacher efficacy.

2.2 The Nature of Teacher Self-Efficacy

The impact of TSE is far-reaching, with empirical research documenting links between TSE and various aspects of a teacher's work and professional life. However, to maximize TSE's potential, we must first understand its nature. Bandura's (1997) Social Cognitive Theory plays a central role in elucidating the nature of TSE, particularly in terms of its antecedents, the cognitive mechanisms associated with how the sources of efficacy are processed into efficacy beliefs, the role of self-efficacy in human behavior, and the changeability of these beliefs (Bandura, 1977).

Both Bandura's (1997) Social Cognitive Theory and Self-Efficacy Theory (Bandura, 1977) established that self-efficacy is "judgments of personal capabilities" (Bandura, 1997) rather than perceptions of control over outcomes as previously understood from the Rand Study (Armor et al., 1976) and Rotter's (1966) Locus of Control. In the field of teaching, TSE refers to a teacher's belief about whether their existing teaching skills and competencies are sufficient to complete a specific teaching task (Tschannen-Moran et al., 1998).

Self-efficacy beliefs are derived from four sources: mastery experiences, vicarious experiences, verbal persuasion, and psychological and somatic states (Bandura, 1977, 1997). For teachers, beliefs about their teaching competence originate from successful teaching enactments or accomplishments (Cabaroğlu, 2014; Tschannen-Moran & Hoy, 2007; Varghese et al., 2016), observation of the performances of other teachers (Cabaroğlu, 2014; Labone, 2004; Morris et al., 2016), verbal persuasion from influential others (Tschannen-Moran & Hoy, 2007), and physical responses and feelings towards teaching tasks and contexts (Tschannen-Moran & Hoy, 2007). Of the four antecedents of TSE, successful teaching experiences and accomplishments are hypothesized to be most influential.

TSE is relatively stable and unchanging unless there are strong reasons that prompt the reappraisal of one's teaching competence (Tschannen-Moran et al., 1998). Comparing the TSE levels of preservice, novice, and experienced teachers in terms of malleability, Tschannen-Moran et al. (1998) posited that it was most easily shaped in preservice teachers and most difficult to modify in experienced teachers. A possible reason for this is that experienced teachers have already established a stable sense of efficacy. However, curriculum reform initiatives, instructional or technological innovations, and other contextual factors may still prompt experienced teachers to reappraise TSE.

TSE differs across teaching tasks and contexts in terms of its "magnitude, generality, and strength" (Bandura, 1997). The level of TSE may fluctuate based on one's personal assessment of their competence in relation to a teaching task or context (Bandura, 1997). According to Chesnut and Burley (2015), teachers do not feel confident in all aspects of their teaching. Therefore, TSE levels may vary across instructional capabilities and tasks, across subjects, and across cultural contexts. Given variability in TSE across different aspects of a teacher's work and professional life, TSE measurement should closely consider task demands and teaching context.

TSE is hypothesized to influence the activities teachers engage in, the effort they extend in teaching and their students, and the persistence they have when managing difficult situations. Extant literature related to TSE has provided empirical evidence that TSE is a predictor of teaching behaviour and performance (Burić & Kim, 2020; Depaepe & König, 2018; Sandholtz & Ringstaff, 2014; Sutjonong et al. 2022; Tschannen-Moran & Hoy, 2001), job satisfaction (Klassen & Chiu, 2010; Ortan et al., 2021; Skaalvik & Skaalvik, 2014; Wang et al., 2015), stress and emotional exhaustion (Dicke et al., 2015a; Skaalvik & Skaalvik, 2007, 2010, 2014; Yao et al., 2015), and attitudes towards change and innovation (Bennett, 2007; Huang et al, 2026; Nie et al., 2013a). The discussion will be limited to the impact of TSE on the adoption of educational innovation, which is the focus of this paper.

2.3 Sources of Efficacy

Teachers develop their self-efficacy beliefs through four antecedents: mastery experiences, vicarious experiences, verbal persuasion, and physiological and affective states. A crucial aspect of understanding TSE lies in how the different sources are cognitively processed into self-referential thoughts. Over the years, researchers have explored which sources of efficacy are most influential and how these sources interact to shape TSE. Tschannen-Moran and Johnson (2011) emphasized the importance of context in shaping self-referential thoughts. Labone (2004) posited that a teacher's response to sources of efficacy also augments one's TSE. Bandura (1997), on the other hand, emphasized the role of cognition and reflection in the processing of efficacy information. Furthermore, TSE depends on the accuracy of judgments about efficacy information (Labone, 2004).

TSE is essentially an amalgamation of all sources of efficacy information, rather than a single source (Bandura, 1997). Consequently, Bandura (1997) has emphasized the "additive effect" of the different sources of efficacy information and noted that individuals may differ in how they integrate these sources. In the field of teaching, research has examined how integrating different sources of efficacy information enhances TSE in implementing new teaching strategies (Huang et al., 2020; Tschannen-Moran & McMaster, 2009) and commitment to teacher education (Pfitzner-Eden, 2016; van Rooij et al., 2019).

Enactive mastery experiences, often referred to interchangeably with "performance achievements" and "enactive attainments" (Bandura, 1977, 1982, 1997; Skaalvik & Skaalvik, 2007), are regarded as the most influential of all efficacy sources. Taken in the context of teaching, enactive mastery experiences relate to "successful teaching experiences" (Varghese et al., 2016) or "actual teaching accomplishments" (Cabaroğlu, 2014). It has the most impact on a teacher's overall TSE for two reasons. Firstly, it is the most reliable indicator of one's potential for success in a teaching task as it is derived from actual teaching performance. Secondly, enactive mastery experiences boost teachers' confidence that they can succeed in demanding and difficult teaching tasks or situations, as they have had prior success (Bandura, 1994).

Enactive mastery experiences also reinforce teachers' abilities to navigate and resolve problems in their line of work (Wyatt, 2010). Teachers gain insights into how their actions, teaching skills, and competencies have impacted task and situational outcomes by reflecting on their past teaching achievements. Through successful teaching experiences, teachers gain knowledge of the difficulties and complexities of a teaching task, allowing them to pre-empt problems in similar tasks in the future (Tschannen-Moran et al., 1998). Furthermore, the initiation of coping strategies and behavior is greatly influenced by enactive mastery experiences. The role of this source of efficacy information is largely tied to how enactive mastery experiences are processed into TSE (Morris et al., 2016). By deconstructing enactive mastery experiences through cognitive processing, teachers acquire useful diagnostic information that helps them assess and evaluate their teaching performance against the requirements of the task.

Besides enactive mastery experiences, vicarious experiences also shape TSE. Defined as "relevant observations of other teachers' instructional practices" (Varghese et al., 2016), it prioritizes teachers' role in appraising their own performance relative to the performance of effective social models (Cabaroğlu, 2014; Labone, 2004; Tschannen-Moran & Hoy, 2007). Social models include those that teachers perceive

as comparable to themselves in either performance or attributes (Bandura, 1997). Other factors that teachers may use to benchmark themselves against others include teaching context, student profile, and even societal and cultural factors. One way vicarious experiences may impact one's TSE is through coping and mastery models (Labone, 2004). Observing how other teachers have surmounted challenges in teaching tasks or contexts, whether through gradual or immediate success, influences TSE in three ways. Firstly, it provides evidence that positive self-beliefs can help teachers overcome problems faced in teaching tasks or situations (Bandura, 1982). Secondly, it helps teachers to understand teaching tasks and pre-empt potential problems they may encounter (Bandura 1982). Thirdly, it elucidates the different teaching strategies and dispositions needed for effective mastery of teaching skills and management of teaching situations (Bandura, 1982, 1997). As a source of efficacy, vicarious experiences provide valuable information about useful strategies and effective strategy use, the task or teaching context, and, beyond that, the dispositions needed to succeed in a task.

Verbal persuasion is the third source of efficacy information. Described by Bandura (1997) as about whether "significant others express faith in one's capabilities than if they convey doubts", in the field of teaching, it is equated to positive appraisals given to teachers by influential others (Tschannen-Moran & Hoy, 2007). These appraisals may take the form of teaching performance evaluations or verbal encouragement (Varghese et al., 2016). However, not all forms of verbal persuasion are effective for teachers. Three factors influence the effectiveness of verbal persuasion: the way the performance feedback is framed, assumptions of the skill level and trustworthiness of the persuader, and the gap between a teacher's current level of teaching performance and the level recommended by the influential other (Bandura, 1997; Labone, 2004; Morris et al., 2016). Furthermore, verbal persuasion can only impact TSE positively if it is perceived as being genuine and focused. From the perspective of teaching, this would mean that the appraisal clearly highlights areas achievable for an individual teacher and is presented in a constructive, non-disparaging manner.

The fourth and final source of efficacy information is physiological and emotional states, sometimes referred to as "somatic and emotional states" (DeVellis, 1983). As a source of efficacy, physiological and emotional states elucidate how a teacher handles challenging teaching situations and tasks. Teachers' emotional responses can range from happiness and pleasure to stress (Tschannen-Moran & Hoy, 2007). At times, physiological states such as tiredness and fatigue also influence TSE (Bandura, 1997). The impact of emotional arousal on TSE varies among teachers. Teachers who are introspective are more inclined to assess their teaching competence based on how they feel during teaching tasks. Similarly, emotional responses have a greater impact on TSE for teachers who dwell on psychological stressors (Bandura, 1997).

Clearly, each different source of efficacy information has its distinct influence on TSE. The cognitive processing of these sources, too, is known to vary from one teacher to another. While some teachers may equate the number of efficacy sources to their teaching competence and performance, others may weigh the relative importance of the different sources. Owing to this, understanding the different sources of efficacy has pragmatic implications, particularly when investigating teacher behavior across different aspects of their work.

2.4 TSE and Educational Innovation

Educational innovation has become a defining feature in contemporary learning environments. TSE is a valuable construct to consider in teachers' adaptation to these changes, as research has shown that TSE can predict teachers' capacity to manage educational change and innovation (Caprara et al., 2013; Skaalvik & Skaalvik, 2010; Tschannen-Moran et al., 1998; Tschannen-Moran & Johnson, 2011) in two main ways. Firstly, TSE impacts teachers' attitudes towards educational innovation. Secondly, TSE influences teachers' adoption of new developments and innovations within the educational ecosystem (Ghaith & Yaghi, 1997; Nie et al., 2013).

Teachers with high TSE perceive educational innovation more positively, as they believe they can cope with the changes associated with such innovation, thus spending less time on their inadequacies and magnifying the degree of change that may result (Bandura, 1997). In contrast, teachers with low TSE may view technological advancement or instructional innovation as a threat and thus be less responsive to these changes. However, studies on TSE during the implementation of educational innovation have yielded mixed evidence on whether teachers with high TSE were more positive and receptive to instructional innovation (Ghaith & Yaghi, 1997; Guskey, 1988; Nie et al., 2013). A study by Yesilyurt et al. (2016) investigating the association between TSE, computer self-efficacy (CSE), and attitude towards computer-supported education found that TSE significantly influenced teachers' attitude towards such education. However, other studies by Bai (2019) and Al-Adwan et al (2023) found that TSE had only an indirect effect on attitude towards educational technology innovation.

TSE is also regarded as a powerful predictor of teachers' adoption and use of educational innovation across learning environments worldwide (Bennett, 2007; Cerit, 2013; Gorozidis & Papaioannou, 2014; Hidayat, R., & Patras, Y. E., 2024; Nie et al., 2013a). Nie et al.'s (2013) study on the implementation of instructional innovation during Singapore's Thinking School, Learning Nation reform initiative, found that teachers with high TSE embraced and used constructivist instruction more frequently. Similarly, another study by Ghaith & Yaghi (1997) found that personal teaching efficacy (PTE) predicted teachers' adoption of the Student Teams Achievement Divisions (STAD) method of cooperative learning. In keeping with developments in today's educational ecosystem and the proliferation of AI-based educational technology, much recent research has focused on the link between TSE and the adoption of AI-based educational innovations. A study by Lee and Lee (2024) observed a strong direct influence of TSE on digital adaptation. Similarly, Bishara (2025) found that efficacious teachers were more inclined to embed AI-based educational technology into their practice. From the perspective of educational technology adoption, Herzallah et al. (2025) observed that teachers tend to prioritize digital tools that were easily integrated into their current practice and caused minimal disruption to their teaching. Recognizing that teacher behavior is influenced by personal, environmental, and behavioral factors, further research is essential to investigate how TSE may interact with other contextual factors during the implementation of educational innovation.

Educational change and innovation place many demands on educators, including the burden of additional work, the pressures of time, the management and evaluation of one's teaching practice, and their changing roles in the classroom (Creagh

et al., 2013; Chiang et al., 2025; McCormick et al., 2006; Vidergor, 2022). Teachers may also experience obstacles and setbacks while implementing educational innovations. As these innovations impact teachers' work in various ways, teachers' beliefs in their ability to enact the changes can significantly influence their subsequent initiation and implementation, and, in the long run, their resilience in coping with potential difficulties. If teachers doubt their capabilities, they may avoid investing effort to resolve the difficulties they face or completely disengage (Bandura, 1997). Studies focused on how educational innovation and curriculum change impact teachers have explored the relationship between these factors and teachers' changes. A study that focused on the implementation of a new curriculum in Taiwan found that TSE played a critical role in teachers' effectiveness in enacting the new elementary school curriculum. They further emphasized the role of TSE in helping elementary school teachers adapt to job challenges and in developing competencies for implementing the new curriculum. Another study by McCormick et al. (2006), conducted during a major curriculum reform in Australia, examined how self-efficacy variables influenced teachers' coping strategies. They observed that teachers tend to adopt palliative coping strategies, such as distraction and reduced effort, rather than active problem-solving.

Despite the potential positive influence of TSE during the introduction of instructional or technological innovation, positive efficacy beliefs may not always lead to optimism and adoption of such changes (Settlage et al., 2009; Wheatley, 2002). On the flipside, teachers with high TSE may resist new instructional strategies, pedagogical content, and even educational innovations (Settlage et al., 2009; Wheatley, 2002). Given the underexplored link between TSE and the rejection of innovation, teachers may feel that educational innovation could invalidate the progress and achievements they have made with their learners. In cases like this, uncertainty and doubt created by the introduction of educational technology advancements or instructional innovations may have a positive effect, as it provides compelling reasons for the reappraisal of one's teaching competence (Settlage et al., 2009; Tschannen-Moran et al., 1998; Wheatley, 2002), an important process considering that TSE can be relatively unchanging once established (Tschannen-Moran et al., 1998a). Doubts about one's teaching competence due to educational innovation also motivate upgrading teaching skills and efforts to collaborate with other educators. Given the potential aspects in which teacher doubts may drive more proactive action on the part of the educator, low TSE may not necessarily be a bad thing

3. CONCLUSION

TSE plays a crucial role in teachers' adaptation and innovation. Given the prevalence of educational innovation in today's learning environments, TSE can influence not only teachers' perceptions and receptivity to change, but also the use of this innovation in classrooms. Through professional development initiatives that embed TSE as a core element, schools and policymakers can augment TSE in enacting educational innovation. The inclusion of TSE assessment in evaluation frameworks also guides the various stakeholders in identifying teachers' needs and tailoring interventions when necessary. Beyond that, monitoring TSE can also be a good indicator of aspects of innovation that teachers may need more support with. Therefore, schools and policymakers must acknowledge TSE as a key element in their efforts to encourage implementation of educational innovation.

The paper proposes significant contributions to offer a strategic roadmap demonstrating that reform initiatives grounded exclusively in technical instruction or hierarchical mandates will prove ineffective if the foundational efficacy ecosystem remains unaddressed, thereby establishing that meaningful innovation necessitates cultivating both educator confidence and the institutional infrastructure required to sustain it.

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