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Study on the Interactive Pathways of Improving Middle School Students' Sense of Learning Efficacy and Teachers' Sense of Teaching Efficacy

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Abstract: Learning efficacy is a middle school student's subjective judgment of their own learning ability based on past learning experiences, which directly influences their learning motivation, persistence, and academic performance. Teaching efficacy, on the other hand, is a teacher's belief in their ability to effectively complete teaching tasks and promote student development, and is the core driving force behind their professional behavior. In current middle school education, some middle school students experience a weakening sense of learning efficacy due to increasing subject difficulty and academic setbacks. Teachers, on the other hand, often face fluctuations in their sense of teaching efficacy due to teaching pressure and student management challenges. The negative interaction between the two has become a significant factor hindering the improvement of teaching quality. This paper draws on Bandura's social cognitive theory of "self-efficacy" and "tripartite interactive determinism" as its core theoretical foundation. Integrating survey data on middle school student and teacher efficacy published in journals such as Educational Research and Psychological Development and Education, this paper systematically explores the bidirectional influencing mechanisms between middle school students' learning efficacy and teachers' teaching efficacy through literature analysis, theoretical integration, and practical case studies. It identifies actionable interactive pathways, including classroom feedback, post-class dialogue, and community building, and constructs a collaborative support and guarantee system among schools, families, and society. This study aims to provide theoretical references and practical strategies for middle school education practice, helping to break the negative cycle of teacher-student efficacy and achieve a synergistic improvement in middle school students' learning efficacy and teachers' teaching efficacy, ultimately promoting students' well-rounded development and teachers' professional growth.

Keywords: Middle School Students' Learning Efficacy, Teachers' Teaching Efficacy, Interactive Pathways, Social Cognitive Theory, Teaching Practice.

1. Introduction

Since my country's basic education shifted to a "core literacy orientation," students' autonomous learning ability and teachers' professional teaching ability have become key to improving educational quality. Efficacy is the psychological foundation for both abilities. Middle school students are at a critical stage of physical and mental development. Their sense of learning efficacy not only determines their attitude towards learning tasks but also influences their long-term learning habits and academic planning. Teachers' sense of teaching efficacy directly impacts the innovation of their instructional designs, their patience with struggling students, and their willingness to embrace teaching reforms. For example, in the context of the "double reduction" policy, teachers with a high sense of teaching efficacy are more willing to explore differentiated assignments, while those with a low sense of efficacy are more prone to the anxiety that "reducing the workload means reducing quality." However, the interactive relationship between teacher and teaching efficacy is often overlooked in current educational practice. If teachers question their own abilities due to poor class performance, they may reduce classroom interaction and increase rote training. This, in turn, leads students to self-doubt due to a lack of positive feedback, creating a "cycle of low efficacy." If students continue to lag behind academically and develop a belief that "I can't learn," classroom silence and procrastination on assignments can exacerbate teachers' frustration and further undermine their sense of teaching efficacy. At the theoretical level, existing research focuses primarily on factors influencing middle school students' sense of learning efficacy or strategies for enhancing teachers' sense of teaching efficacy, with few systematic discussions of the interaction between the two. In practice, while schools prioritize teacher training and student tutoring, they lack a comprehensive design linking the two. This study, focusing on "interaction," integrates real-world educational scenarios and empirical findings to analyze the logic underlying the two-way influence of teacher-efficacy and identify practical interactive pathways. This approach not only enriches the application of self-efficacy theory in K-12 education but also provides feasible solutions for improving the teaching ecosystem and enhancing educational quality in middle schools.

2. Core Concepts and Theoretical Foundations

2.1. Definition of Core Concepts

Learning efficacy, derived from Bandura's self-efficacy theory, is an individual's subjective judgment of whether they can complete a specific learning task with their current abilities, rather than an objective assessment of their abilities. For middle school students, this sense of efficacy varies significantly across disciplines and contexts. For example, some students may have a high sense of efficacy in Chinese writing and believe they can compose well, but find it difficult to master physics formulas. This is related to their disciplinary

foundation and past successful experiences. A 2023 survey in the journal "Psychological Development and Education" revealed that among the core influencing factors of middle school students' sense of learning efficacy, "previous academic success," "teacher evaluation," and "peer competition" ranked top, in that order. Teacher evaluation accounted for 35%, far exceeding peer competition's 22%, providing a basis for the interaction between teacher and student efficacy. Teacher efficacy is categorized as "general" and "personal." The former reflects the teacher's overall belief in whether education can change students, while the latter is the individual judgment of whether their teaching can promote student development. Teachers with high personal efficacy are more willing to adjust their teaching methods when faced with struggling students rather than attributing their learning difficulties to "lack of student ability." The Ministry of Education's 2022 "Basic Education Teacher Development Report" noted that while middle school teachers in my country generally have a high sense of general teaching efficacy, individual efficacy varies significantly. This variability is a key entry point for the interaction between teacher and student efficacy[1].

2.2. Theoretical Support

Bandura's "Social Cognitive Theory" is the core support for this study. His "Tripartite Interactive Determinism" proposes that individual behavior, personal factors, and environmental factors interact to determine development. In middle school teaching, teachers' sense of teaching efficacy influences their teaching behavior. This behavior becomes an "environmental factor" for students, impacting their sense of learning efficacy. Simultaneously, students' sense of learning efficacy influences their learning behavior, which in turn becomes an "environmental factor" for teachers, influencing their sense of teaching efficacy. This interaction between the two is a typical manifestation of a "tripartite interaction." Furthermore, Bandura's four pathways to self-efficacy provide a basis for designing interactive pathways: "successful experience," "vicarious experience," "verbal persuasion," and "emotional awakening." These four pathways are applicable to enhancing teachers' sense of efficacy and can also achieve "two-way empowerment" through interaction. For example, teachers can design differentiated tasks to help students gain "successful experiences." Students' positive feedback then becomes a "successful experience" for teachers, strengthening both sides' sense of efficacy.

3. The Current Status and Interactional Dilemma of Middle School Students' Sense of Learning Efficacy and Teachers' Sense of Teaching Efficacy

Currently, middle school students' sense of learning efficacy is generally average, with significant differentiation between subjects and a decreasing trend with grade level. A 2024 national sample (15,000 students from 120 schools in 31 provinces) published in the Chinese Journal of Educational Studies revealed that students' sense of efficacy averaged 3.2 points (on a 5-point scale), with significant variations across different dimensions: "Belief in Learning Effort" scored the highest at 3.6, and "Belief in Learning Ability" scored the lowest at 2.9. This suggests that students recognize the value of effort but lack confidence in their own learning abilities. Within academic disciplines, the sense of efficacy in humanities subjects like Chinese and history (3.4 points) was significantly higher than that in science subjects like mathematics and physics (2.8 points). Science subjects are prone to frustration and struggle to achieve a sense of accomplishment quickly through rote memorization, leading to a perception that "science is difficult to learn." By grade level, scores were highest in the first year of junior high and the first year of senior high, at 3.5 points, dropping to 3.1 points in the second year of junior high and the second year of senior high, and lowest at 2.9 points in the third year of junior high and the third year of senior high. This is primarily due to the increasing difficulty of the academic stage and the pressure to enter higher education, especially in the high school entrance exam and college entrance exam grades, where a single failed mock exam can lower their sense of efficacy. Middle school teachers' sense of teaching efficacy is generally high, but low for individuals; and high for experienced teachers, but low for new teachers. A 2022 report from the Ministry of Education shows that 82% of teachers agree that "education can change students" (general efficacy), but only 56% believe that "their teaching can improve all students' academic performance" (personal efficacy). Personal efficacy initially decreases and then increases with teaching experience: new teachers with 1-3 years of experience have the lowest personal efficacy (48%), lacking experience and prone to self-doubt when faced with classroom management and student differences. Teachers with 4-10 years of experience have a slight increase (55%), but are plagued by burnout and teaching bottlenecks. Senior teachers with 11 or more years of experience have the highest personal efficacy (68%), possessing greater experience and strategic skills, making them more comfortable handling teaching issues. The interaction between teachers and students faces three major challenges: First, a negative feedback loop. Teachers with low efficacy are prone to criticism and neglect, which leads to students lacking positive encouragement and self-doubt. Students, however, become silent in class and perfunctory in their assignments, which in turn makes teachers feel their teaching is ineffective and their sense of efficacy even lower[2]. For example, a middle school math teacher, due to a low class average, blamed students for being "slow to respond," leading to students' fear of math and copying homework, which in turn led to lower grades. Second, there is a misalignment of needs. Students desire personalized attention and experiences of success, while teachers prioritize progress and order. For example, a junior high English teacher, using a "teaching and practice" approach to meet progress goals, neglects struggling students, leading to a decrease in their sense of efficacy. Third, pressure is transmitted. Schools evaluate teachers based on grades and college admissions rates, which in turn puts pressure on students. Students, in turn, feel negative about themselves due to poor test scores and pass on the pressure through complaints. For example, a senior high school teacher at a key middle school, demanding a 90% college admissions rate, required more homework and frequent exams, causing students to lose sleep and become disenchanted with learning, while the teacher also worried about failing to meet the goals.

4. The Bidirectional Influence Mechanism Between Middle School Students' Sense of Learning Efficacy and Teachers' Sense of Teaching Efficacy

Teachers' sense of teaching efficacy can influence middle school students' sense of learning efficacy in two ways. Specifically in terms of teaching behavior, teachers with a high sense of efficacy often help students boost their sense of efficacy through positive feedback, differentiated tasks, and contextualized learning. For example, when a student makes a mistake solving a problem, they first affirm their rational approach before analyzing the problem, rather than directly denying it, making the student feel recognized for their efforts. They also design tasks based on the student's foundation, so that struggling students feel "I can learn" after completing basic problems, average students see progress when doing advanced problems, and top students feel more confident when tackling difficult problems. They are also adept at making abstract knowledge engaging, such as through experiments and stories, to reduce anxiety caused by the difficulty of the knowledge. The influence of teaching beliefs is more indirect. High-performing teachers often say things like, "A difficult problem can be solved by analyzing it step by step" and "You've improved compared to last time." These statements convey the idea that students have potential and that their efforts are useful, which is conveyed through their words and actions. Low-performing teachers, however, might say, "Why can't you learn?" and this can make students feel inadequate. Middle school students are in the process of forming their values and are more likely to identify with their teachers' beliefs, making this influence more pronounced[3]. Conversely, middle school students' sense of learning efficacy can also influence teachers' sense of teaching efficacy. Students' learning behaviors provide immediate feedback on teaching effectiveness. If students actively raise their hands in class, participate in discussions, or ask questions after class, teachers will feel their lessons are engaging and effective, boosting their sense of efficacy. For example, if a Chinese teacher designs a poetry recitation activity and students actively participate, she feels successful. However, if students sleep in class or don't turn in homework, the teacher may doubt her teaching and her sense of efficacy may decline. Students' academic outcomes have long-term impacts. If students' grades steadily improve, especially for struggling students, teachers will feel their teaching is working. For example, a physics teacher in the ninth grade helped a perennially failing student achieve a 70 on the high school entrance exam after adjusting their approach, which boosted their confidence. However, if students' grades remain stagnant, teachers may feel inadequate and their sense of efficacy may decline. Furthermore, students' emotional attitudes can also influence teachers: if students are enthusiastic about learning and their eyes are focused, teachers will find teaching meaningful and more motivated. However, if students say, "Studying is too tiring and I don't want to study," teachers may feel frustrated and unable to help, and their teaching confidence may be undermined[4].

5. Specific Interactive Pathways to Enhance Middle School Students' Sense of Learning Efficacy and Teachers' Sense of Teaching Efficacy

The classroom, as the core setting for teacher-student interaction, can enhance both sides' sense of efficacy through a two-way approach of "instant feedback + precise response." Teachers can use random questions and group presentations to gauge students' understanding. Feedback should begin with affirmation and then offer specific suggestions, such as praising innovative solutions and then reminding students of the applicable conditions for formulas. During exercises, teachers can provide face-to-face review and correction, guiding students to correct their own mistakes and making them feel valued. Furthermore, teachers can allocate three minutes per class for students to express their learning, confusion, or suggestions in one sentence, allowing teachers to adjust their instruction accordingly. For example, a first-year Chinese teacher switched from one-way instruction to small-group inquiry-based instruction combined with roving guidance. They also collected student feedback and developed mnemonics and competitions addressing the difficulty of classical Chinese translation. This resulted in increased student engagement and greater recognition of the teacher's teaching. Beyond the classroom, after-school tutoring can also utilize a "personalized + growth dialogue" approach. Teachers can tailor their plans to each student's situation: students with learning difficulties should first work on basic exercises before moving on to simple applications, providing affirmation upon completion; students with average learning abilities should be given supplementary materials, while those with outstanding learning abilities should be assigned inquiry-based tasks. During tutoring, listen more to students' learning concerns and confusions, and use questions to stimulate their reflection, such as "Why didn't you do well on this test? What do you think you did wrong?" A junior high math teacher tutored struggling students twice a week, both to improve their foundation and to share their concerns. After one semester, the average math score of struggling students increased by 15 points, and the teacher gained greater confidence in teaching[5]. Furthermore, building a community of teaching practice between teachers and students can promote collaborative growth. Schools can organize teachers and students to work together to design teaching plans, select assignment types, and set evaluation criteria. For example, during lesson preparation, teachers can listen to students' interests and provide written and practical assignments. A senior high school Chinese teacher worked with students on a special study of "Dream of the Red Chamber," incorporating student suggestions for "role-playing" and "book sharing." This led to more active student participation in reading and improved teaching effectiveness. Finally, combining achievement presentations with attribution guidance can help teachers and students develop correct cognition. The school regularly organizes knowledge competitions and homework exhibitions, allowing students to showcase their achievements. Teachers guide them to attribute success to hard work and the right approach, and failure to insufficient effort or a need for improvement, rather than to inability. For example, if a student wins a competition, they can say, "It's the result of your regular practice." If they fail an exam, they can analyze their review or methodological issues together. Teachers should also attribute their success in

this way. One English teacher attributed good grades to their teaching methods and their focus on students. When grades dipped, they identified problems with their homework design. After adjustments, grades rebounded, and their teaching confidence was not significantly affected.

6. Support and Guarantee System for Implementation of Interactive Pathways

The classroom, as the core setting for teacher-student interaction, can enhance both parties' sense of efficacy through a two-way approach of "instant feedback + precise response." Teachers can use random questions and group presentations to gauge students' understanding. When providing feedback, they can first affirm and then offer specific suggestions, such as praising a novel approach and then reminding students of the applicable conditions for a formula. During exercises, they can review and correct mistakes face-to-face, guiding students to correct their own mistakes and making them feel valued. Three minutes are also allocated during each class for students to express their gains, confusions, or suggestions in a single sentence, allowing the teacher to adjust their teaching accordingly. For example, a first-year Chinese teacher switched from one-way lectures to group exploration and guided instruction. The teacher also collected student feedback and developed mnemonics and competitions to address the difficulty of classical Chinese translation. As a result, student engagement increased, and the teacher's teaching was more highly regarded. Beyond classroom instruction, after-school tutoring can also utilize a "personalized + growth dialogue" approach. Teachers can tailor their plans to each student's situation: students with learning difficulties should first work on basic exercises before moving on to simple applications, with recognition provided for each completed task; students with average skills should be given supplementary materials, while students with outstanding skills should be assigned exploratory tasks. During tutoring, teachers should listen to students' learning concerns and use questions to stimulate their thinking, such as "Why did you not do well on this test? Where do you think you went wrong?" A junior high math teacher provided tutoring twice a week to struggling students, both to improve their foundation and to share their concerns. After one semester, the average math score of struggling students increased by 15 points, boosting the teacher's confidence in teaching. Furthermore, building a community of teaching practice between teachers and students can foster collaborative growth. Schools can collaborate with teachers and students to design teaching plans, select assignment types, and establish evaluation criteria. For example, during lesson preparation, teachers can listen to students' interests and provide written and practical assignments. A senior high school Chinese teacher worked with students on a special study session on "Dream of the Red Chamber," incorporating student suggestions for "role-playing" and "book sharing." This led to active student participation in reading and improved teaching effectiveness. Finally, presentations of findings combined with guidance on attribution can help both teachers and students develop sound cognition. The school regularly hosts knowledge competitions and homework exhibitions, allowing students to showcase their achievements. Teachers guide students to attribute success to hard work and effective methods, and failure to insufficient effort or a need for improvement, rather than to incompetence. For example, if a student wins a competition, they can explain, "It's the result of your regular practice and summary." If they fail an exam, they can analyze their review process or methodological issues. Teachers should also attribute their success in this way[6]. One English teacher attributed good grades to their teaching methods and their focus on students. When grades dipped, they identified problems with their homework design. After adjustments, grades rebounded, and their teaching confidence was not significantly affected.

7. Conclusion

Based on Bandura's social cognitive theory and combining empirical data with educational practice cases, this study explored the interactive pathways between middle school students' sense of learning efficacy and teachers' sense of teaching efficacy. The main conclusions are as follows: First, there is a clear bidirectional influence between teachers' sense of efficacy. Teachers' teaching behaviors and beliefs directly and indirectly shape students' sense of efficacy. High-efficacy teachers contribute to this through positive feedback., differentiated instruction, etc., create successful experiences for students and instill positive beliefs. Students' learning behaviors, academic outcomes, and emotions will also influence teachers through immediate feedback, long-term impact, and emotional contagion, forming an interactive relationship where "teachers influence students, and students feed back to teachers." Secondly, the paths to enhance both teachers' and students' sense of efficacy are practical and actionable. Bidirectional feedback in class enables immediate adjustments between teachers and students; after-class growth dialogues address students' individual needs; teacher-student teaching communities highlight students' agency and optimize teaching strategies; and achievement presentations combined with attribution guidance help teachers and students develop positive cognitions. These paths are not isolated and must be flexibly applied in context. Finally, implementation requires collaboration among schools, families, and society. Schools must provide support through training, evaluation, and resource allocation; families must shift their perspectives and strengthen communication to build bridges; and society must foster an atmosphere through publicity, resource integration, and policy support. Only through these three elements can the negative cycle of teacher-efficacy be broken. This study addresses the shortcomings of existing research on interactive mechanisms, enriches the application of self-efficacy theory in K-12 education, and provides practical strategies for middle schools. However, this study lacks original empirical evidence, and subsequent investigations targeting different regions, stages of education, and disciplines could be conducted to further optimize the approach. In short, the interaction between teacher-student empowerment is a dynamic process that requires the joint efforts of teachers and students, along with support from all three parties. Only in this way can we achieve synergistic improvement, promote the all-round development of students and the professional growth of teachers, and advance the high-quality development of basic education.

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