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The impact of professional development on special education teachers' use of evidence-based instructional and behavioral practices

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Abstract
Professional development (PD) is an important mechanism for improving special education teachers' knowledge, instructional skills, and implementation of evidence-based practices (EBPs). This paper examines how structured professional development influences special education teachers' use of evidence-based instructional and behavioral practices. The proposed framework integrates workshops, demonstrations, collaborative practice, performance feedback, coaching, classroom implementation, and data-based reflection. Recent research indicates that high-quality special education PD produces stronger effects on teacher outcomes than on student outcomes, highlighting the importance of practical training (Didion *et al.*, 2026). The importance of didactic training, live demonstrations, exercises, assessment, and coaching was determined as key aspects of a 2024 comprehensive research project on EBP training (Wang *et al.*, 2024). This study proposes a simulated pretest–posttest evaluation measuring teacher knowledge, implementation fidelity, instructional practice, behavioral-support use, and student engagement. The framework emphasizes sustained coaching and performance feedback as mechanisms for translating professional learning into classroom practice.

Keywords: Special Education, Professional Development, Evidence-Based Practices, Teacher Training, Instructional Practices, Behavioral Practices, Coaching, Implementation Fidelity

Introduction

Special education teachers work with students who have diverse academic, behavioral, communication, and social-emotional needs. Effective instruction therefore requires teachers to select and consistently implement practices supported by research. However, knowledge of an evidence-based practice does not automatically ensure accurate classroom implementation, and a persistent research-to-practice gap remains despite legal mandates calling for evidence-based instruction (Cook *et al.*, 2013; Individuals with Disabilities Education Improvement Act, 2004) [1, 2]. Professional development can bridge this gap by providing teachers with knowledge, demonstrations, opportunities for practice, feedback, and continued coaching.

Recent evidence supports this relationship. A 2026 *meta*-analysis of special education professional development reported a larger average effect on teacher-related outcomes than student outcomes, with teacher outcomes showing an effect size of $g = 0.53$ and student outcomes $g = 0.17$ (Didion *et al.*, 2026) [3]. The reviewed PD programs addressed areas including literacy, behavioral support, explicit instruction, and data-based decision-making. A systematic review also found that practical exercises, performance feedback, and on-site coaching are particularly relevant to improving implementation fidelity and sustaining outcomes (Wang *et al.*, 2024) [4].

Literature review

Research consistently identifies professional learning as an important factor in supporting teachers' implementation of evidence-based practices (Desimone, 2009; Darling-Hammond *et al.*, 2017) [6, 5]. PD approaches vary from one-time workshops to multicomponent programs incorporating modeling, practice, observation, feedback, and coaching. Evidence suggests that active participation is more closely aligned with implementation than passive information delivery alone (Joyce *et al.*, 1980; Darling-Hammond *et al.*, 2017) [7, 5].

A 2024 analysis of in-service training for special education teachers identified six common factors: instruction, demonstration, video demonstration, practice, assessment, and coaching (Wang *et al.*, 2024) [4]. Training programs containing some or all of these components showed substantial positive effects on teacher outcomes. Similarly, a 2026 *meta*-analysis found positive effects of special education PD on teacher knowledge, skills, and related outcomes (Didion *et al.*, 2026) [3]. Broader evidence from inclusive-education PD

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also reported positive effects on teacher knowledge, skills, beliefs, and student behavior (Donath *et al.*, 2023) [8].

Table 1. Literature Review of Professional Development and Evidence-Based Practices

Study/Area	PD Component	Main Outcome
Wang et al. al. (2024)	Modeling, practice, feedback, coaching Active, content-focused	Improved EBP implementation Improved teacher outcomes
Didion et (2026)	PD	
Levi-Nielsen *et al.* (2026)	Performance feedback	Increased teacher behavior
Donath *et al.* (2023)	Knowledge and skills training	Improved teacher competencies
Kraft *et al.* (2018)	Coaching and feedback	Improved implementation fidelity

Problem statement and motivation

3.1 Problem statement

Special education teachers may receive professional development without sufficient opportunities to practice, receive feedback, or apply newly learned strategies in authentic classrooms. Consequently, a gap can emerge between teachers' knowledge of evidence-based practices and their actual implementation. Inconsistent use may reduce instructional consistency, weaken behavioral support, and limit opportunities for students to benefit from validated interventions.

Traditional workshop-centered PD can provide information efficiently but may not provide sufficient modeling, practice, observation, and individualized feedback (Joyce *et al.*, 1980) [7]. Research on special education EBP training emphasizes practical exercises, performance feedback, and on-site coaching as important implementation components (Wang *et al.*, 2024; Borosh *et al.*, 2023) [4, 9]. Performance-feedback research published in 2026 [10] likewise found significant improvements in teacher behavior across reviewed single-case studies (Levi-Nielsen *et al.*, 2026) [10].

Table 2. Problem and Motivation

Problem	Effect	Required Response
Limited EBP knowledge	Inconsistent practice	Targeted training
Limited practice	Low implementation fi	Guided practice
Limited feedback	delity Repeated implementation errors	Performance feedback
Limited coaching	Weak maintenance	Ongoing coaching
Limited data use	Poor decision-making	Progress monitoring

Related work

Previous research has examined teacher training, coaching, behavioral skills training, performance feedback, and evidence-based instructional practices. Modeling, practice activities, performance assessment, and on-the-job coaching are some of the key elements in a successful training process, based on an analysis of in-service special education EBP training (Wang *et al.*, 2024) [4]. Research on training and coaching with performance feedback has also demonstrated improvements in teachers' implementation of evidence-based instructional procedures and maintenance following intervention (Kraft *et al.*, 2018; Levi-Nielsen *et al.*, 2026) [11, 10].

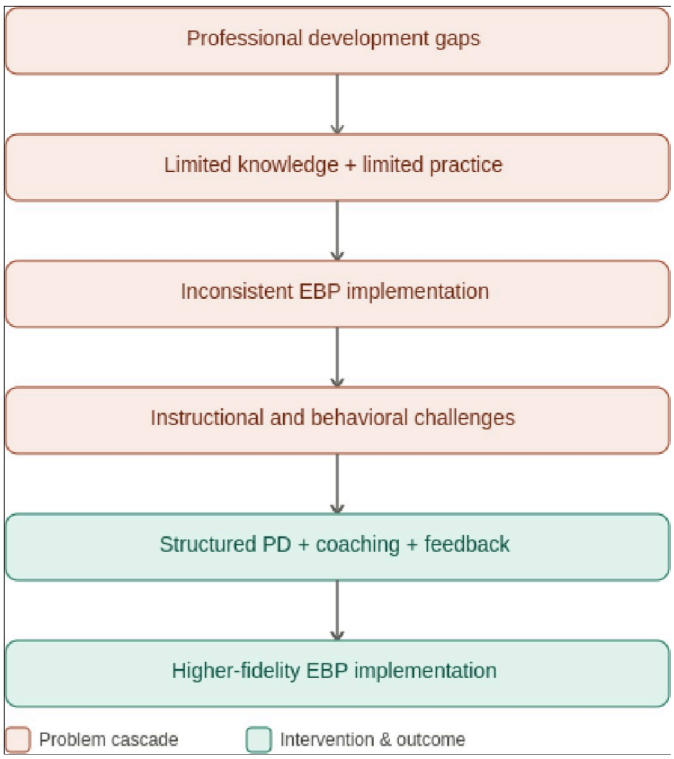


Figure 1. Problem and Motivation Framework

A separate 2023 systematic review found that behavioral skills training was commonly used when special education teachers trained paraeducators to implement practices for students with disabilities (Borosh *et al.*, 2023) [9]. These findings suggest that professional development can extend beyond teacher knowledge toward observable classroom performance.

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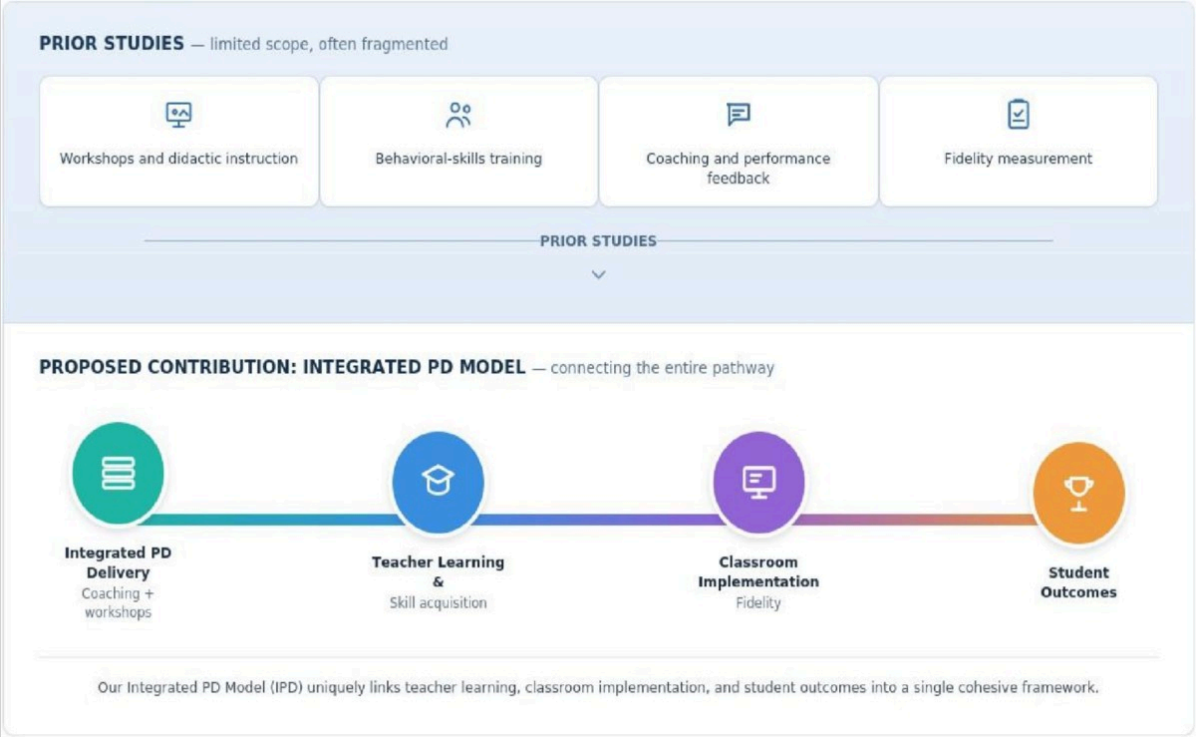


Figure 2. Related Work Roadmap

Methodology / proposed framework

The proposed framework uses a practice-based professional development cycle grounded in the classic training-and-coaching model of theory, modeling, practice, feedback, and coaching for transfer (Joyce *et al.*, 1980) [7]. First, teachers complete a baseline assessment measuring knowledge and current use of evidence-based instructional and behavioral practices. Second, teachers participate in structured training involving explicit explanation, live or video modeling, guided practice, and classroom examples. Third, teachers implement selected practices in authentic classroom settings. Coaches or supervisors observe implementation using fidelity checklists and provide performance feedback. Fourth, teachers review classroom data and identify areas requiring additional support. Finally, coaching and repeated practice continue until implementation becomes stable.

Methodological measures

- **Teacher Knowledge:** Pretest and posttest scores (Didion *et al.*, 2026) [3].
- **Implementation Fidelity:** Percentage of required EBP steps correctly implemented (Sanetti *et al.*, 2009) [12].
- **Instructional Practice:** Frequency of explicit instruction, prompting, scaffolding, and systematic instruction (Archer *et al.*, 2011; McLeskey *et al.*, 2017) [13, 14].
- **Behavioral Practice:** Use of reinforcement, antecedent strategies, behavior-specific feedback, and data-based intervention (Simonsen *et al.*, 2008) [15].
- **Student Engagement:** Percentage of observed intervals involving active academic or instructional engagement (Fredricks *et al.*, 2004) [16].

Experiment / case study / simulation

A simulated pretest–posttest case study is proposed to demonstrate how the framework could be evaluated. A hypothetical sample of 30 special education teachers is divided conceptually into baseline and post-PD measurements. The intervention consists of a four-week professional development cycle involving workshops, modeling, guided practice, classroom implementation, observation, feedback, and coaching. Teacher performance is assessed using a standardized implementation-fidelity checklist informed by progress-monitoring principles (Deno, 1985; Sanetti *et al.*, 2009) [17, 12].

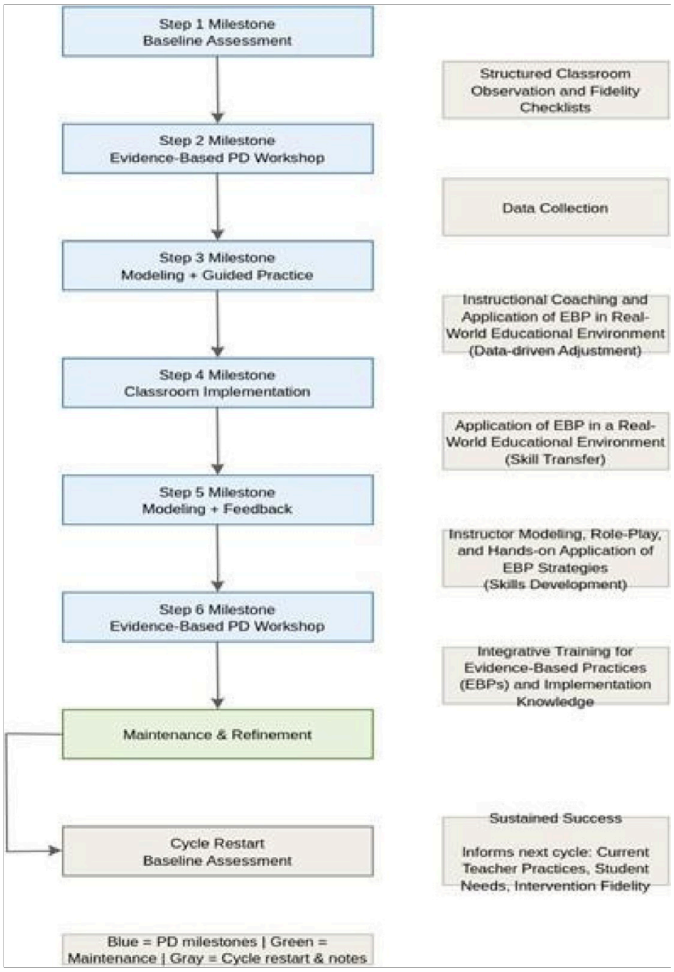


Figure 3. Proposed Professional Development Framework

The simulated results below are illustrative and should not be interpreted as empirical findings from actual participants. The expected pattern is an increase in knowledge, instructional implementation, be

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havioral-support implementation, and student engagement following professional development. This design is consistent with research showing that active professional development and performance feedback can improve teacher-related outcomes (Kraft *et al.*, 2018; Levi-Nielsen *et al.*, 2026) [11, 10].

Table 3. Illustrative Simulation Results

Measure	Pre-PD	Post-PD	Illustrative Change
EBP Knowledge	62%	86%	+24%
Instructional Fidelity	58%	82%	+24%
Behavioral Practice Fi delity	55%	80%	+25%
Data-Based Decision Making	51%	78%	+27%
Student Engagement	64%	81%	+17%

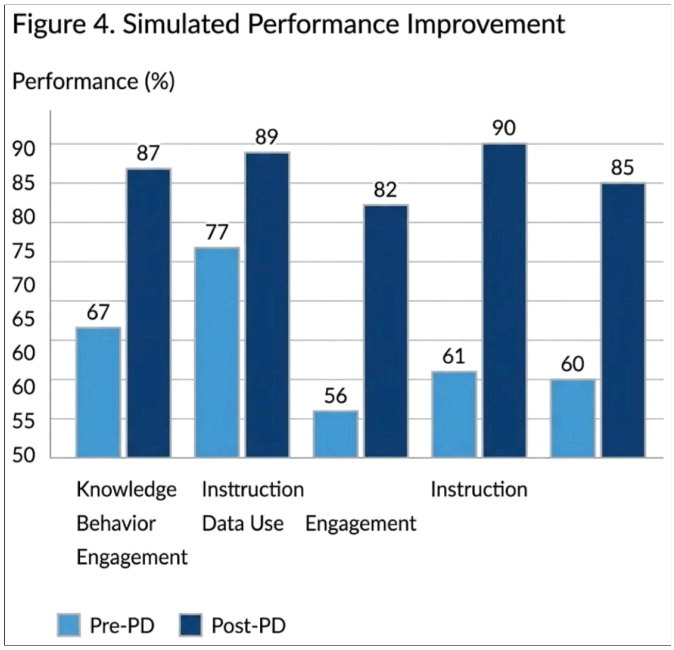


Figure 4. Simulated Performance Improvement

Conclusion

Professional development can play an important role in strengthening special education teachers' use of evidence-based instructional and behavioral practices. The literature indicates that professional learning is more than the delivery of information; effective programs incorporate opportunities for teachers to observe practices, practice skills, receive performance feedback, and apply strategies in authentic classroom environments (Darling-Hammond *et al.*, 2017) [5]. Recent research identifies several important components of special education EBP training: modeling, practical exercises, performance assessment, and coaching (Wang *et al.*, 2024) [4].

The proposed framework connects baseline assessment, structured training, modeling, guided practice, classroom implementation, observation, feedback, data analysis, and sustained coaching. The illustrative simulation demonstrates how teacher knowledge, implementation fidelity, behavioral practices, data use, and student engagement could be monitored before and after PD. Future empirical research should test this framework using larger samples, comparison groups, direct classroom observations, and longer follow-up periods. Such studies can clarify which PD components produce the most durable improvements and how schools can sustain evidence-based practices over time (Desimone, 2009) [6].

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