Review

The Use of Professional Development to Enhance Education of Students with Autism: A Systematic Review

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Abstract: The study objective in this article was to present the state-of-the-art on teachers' professional development to enhance educational quality for students with autism spectrum disorders (ASD) in primary and secondary education. A systematic review was conducted, following the PRISMA guidelines. Quantitative, qualitative, and mixed-methods studies were eligible for inclusion. Fifteen studies were identified and summarized. To identify the eligibility criteria, we applied the SPIDER framework. Quality appraisal was applied using the MMAT. A thematic summary and narrative synthesis of the included studies was conducted to establish a comprehensive understanding of what makes a difference in preparation for teachers of autistic students. Two key factors were found regarding the design of professional development for teachers to enhance their skills to teach autistic students. Firstly, teachers' developed autism-specific knowledge, and secondly, the need for practice-based training with a focus on the challenges teachers meet at their own schools. Multiple ways of addressing teachers' need for professional development regarding autistic students may further contribute to inclusive values and actions.

Keywords: autism spectrum disorders; development disorders; disabilities; education; professional development; special education

1. Introduction

Policy and legislation worldwide reveal an increased demand for teachers' capability to teach all children in ordinary classrooms; thus, professional development to enhance teachers' skills to design inclusive education is essential [1], as educating students with special educational needs and disabilities (SEND) can be challenging [2]. Results from the Teaching and Learning International Survey (TALIS) 2018 [3] point out that shifts regarding societal demands on the inclusion of students with special needs have contributed to higher levels of stress for teachers when trying to modify lessons. Furthermore, the results show that teachers appreciate collaborative learning in their school context and value this form of development higher than other forms. The term self-efficacy is defined as a person's belief that they have sufficient competence to meet challenges they encounter in their work [4]. Some studies suggest that teachers with higher self-efficacy tend to report lower stress levels [5] and burnout [6].

Moreover, studies have reported professionals' concerns regarding their lack of knowledge of support structures needed for children with SEND [7,8]. These findings are supported by TALIS 2018 [3], showing that teacher training focusing on students with special needs is an area requiring urgent attention. This issue was identified by 22% of the teachers and 32% of the principals as the most prominent need.

One group of students, whom teachers report having a lack of competence to teach, are students with neurodevelopmental disabilities (NDDs) [9]. NDD includes several disabilities, such as autism spectrum disorder (ASD) (henceforth we will use the term autism), attention-deficit/hyperactivity disorder (ADHD), intellectual disabilities (IDs), specific learning disorders, and dyslexia [10]. It is not uncommon for individuals to have more than one diagnosis. For example, 31% of individuals with autism are additionally reported to have ADHD [11], and approximately 50% also have ID [12]. In this review, we will specifically explore teachers' professional development efforts in relation to educating students with autism.

School can be challenging for students with autism, and the prerequisites of schools and teachers cannot adequately accommodate the needs of these students. For example, some studies indicate that teachers often feel unprepared to educate students with NDDs in general [9]. This was also pointed out regarding autism in a recent literature review [13], which highlighted the need for classroom-relevant training to teach autistic students. These findings align with prior studies [14,15], suggesting a need to increase teachers' knowledge regarding autism.

Furthermore, teachers find it challenging to accommodate students' wide range of performance levels and meet their various needs [16], which is also found to be challenging for preschool professionals [17]. This may imply that the challenges are present throughout the educational system.

Research results also show that students with autism have a higher likelihood of being placed in exclusive educational settings after the first six school years, which underscores the need to develop teachers' awareness of how inclusive learning settings affect adolescent students with autism [18]. Chen et al. (2021) [19] support this finding, noting that adolescence is a critical time for students with autism, as they face significant challenges (e.g., navigating their social relationships with peers).

Furthermore, absenteeism is a critical issue concerning students with NDDs worldwide. An example of a country where 99% of students are enrolled in ordinary education programs is Sweden [20]. A Swedish Ministry of Education Report [21] points out that disability increases the likelihood of school absence and that this is particularly relevant for students with NDDs. The risk of school failure for students with autism is obvious. A recent article [22] on the academic achievement of Swedish students with autism showed that 43% of autistic students were unqualified to enter upper secondary school. In comparison, only 14% of non-autistic students were unqualified.

Children with autism are also enrolled in Swedish general preschools. A study points out that norms established for typical children affect how children with autism are treated. By doing so, the curriculum itself can become an obstacle for teachers when trying to meet autistic children's needs, thus limiting their inclusive intentions [23]. The example from the Swedish context, where the curriculum explicitly addresses assumptions about children being social and communicative, imposes expectations on children who experience difficulties in such areas. Countries reporting a high rate of children's inclusion in ordinary education still require professional development programs that enhance teachers' skills to meet the students' needs in ordinary classrooms, provide good learning opportunities, and mitigate absenteeism.

Prior research highlighted the gap between the global policy of inclusive education, e.g., the Salamanca declaration, and the difficulties teachers face in translating such a policy into practice [13,24]. The key issues in Lessner Listiakova and Preece's (2020) [13] review include challenges in collaboration, behavior management, and the teaching of social and communication skills. To handle these challenges, professional development models must be studied further to explore their potential to enhance teachers' skills and, thus, increase students' learning possibilities. Improving teaching practice is a worldwide priority, and professional development is crucial to a high-quality and inclusive education system. Teacher development can take different forms and activities; it can be formal and structured, collaborative, or less formal. High-quality teacher development may include

instilling insight, motivating goals, teaching techniques, and embedding practice [25]. A balanced design representing all four areas can enhance the effect and teachers' outcomes for students learning.

There are challenges when implementing professional development for school improvement, where every community has its own unique context and circumstances [26]. Teachers and leaders see improving teaching as essential, where teaching students with SEND is a priority [26], and especially professional learning and education on autism is a high learning preference in school systems [27]. Despite this, professional development for teachers with an explicit focus on autism and other neurodevelopmental conditions is rare [28–30].

Aim and Research Questions

To address the challenges mentioned in the introduction, this study aimed to present the state-of-the-art on the professional development of teachers to enhance the educational quality for students with autism and to capture what matters to enhance teachers' competence in teaching students with autism in primary and secondary education. Three research questions were posed:

RQ1: What characterizes the overall methodology and study design in the included studies?

RQ2: How are professional development efforts designed and implemented to promote learning for students with autism?

RQ3: What are the key benefits of teachers' professional development, according to the main findings of the studies?

2. Methodology

This review employed a systematic search strategy, following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) [31].

2.1. Search Strategy

We conducted a broad search within our narrow focus by including quantitative, qualitative, and mixed-methods studies. The Sample, Phenomenon of Interest, Design, Evaluation, and Research (SPIDER) framework was used (Table 1), as it was developed to search qualitative and mixed-methods research strategies more accurately compared with the PICOS framework [32,33]. Furthermore, it has been identified as relevant to systematic narrative reviews of qualitative literature [32]. In this study, the SPIDER framework was applied to identify inclusion and exclusion criteria.

Table 1. The SPIDER framework.

SPIDER-Framework	
Sample	primary school, middle school, secondary school, special school
Phenomenon of interest	Teachers' professional development (specific focus on autism)
Design	Quantitative, qualitative, mixed methods
Evaluation	Outcome, outcome that included subjective outcomes such as views and attitudes
Research type	Questionnaire, interview, case study, observations, focus group, Randomized Control Trial (RCT), intervention

All three of the present study's authors collaborated in determining the search terms. In February 2023, we conducted an initial electronic test search of two databases—the Education Resources Information Center (ERIC) and the Education Research Complete (ERC). This initial test search led to the search terms being rephrased. An updated search was conducted in March 2023, the findings of which are presented in this study. We included three databases: the ERIC, the ERC, and PsychInfo.

The three databases were chosen based on (a) their focus on educational settings and (b) their open-access status, offering a greater guarantee that teachers could access the

studies found therein. The following search terms were used: "Professional development" AND teacher* AND (autism OR "autism spectrum disorder*" OR asd OR Asperger* OR "asperger* syndrome" OR "autistic disorder*") AND ("k-12" OR "Primary school*" OR "Primary education" OR "elementary school*" OR "elementary education" OR "middle school" OR "Secondary school*" OR "High school*"). The inclusion criteria included educational settings within both mainstream and special education, ranging from primary school to secondary school levels. Furthermore, we were interested in relatively recent publications from 2012 to 2023 (30 March), all peer-reviewed and written in English (Table 2 presents full inclusion/exclusion criteria).

**Table 2.** Inclusion and exclusion criteria.

Inclusion	Exclusion
Educational settings from primary to secondary school, general placement and special school covering the same school years	Preschool, further education college, university
Teachers' professional efforts with focus on enhancing autism understanding and strategies (e.g., instructions, accommodations, modifications) in educational settings	General professional development efforts
Peer reviewed	
Questionnaire, interview, case study, observations, focus group, RCT, intervention	Reviews, thesis, study protocol
Year intervals 2012–2022	
English	

2.2. Study Selection

The combined database search identified 66 studies. Figure 1 presents the study identification and selection process in a PRISMA flowchart. Initially, EndNote was used to organize the records, and finally, Rayyan was used in the screening processes. After removing duplicates, 54 studies remained.

Their titles and abstracts were screened individually by the first and third authors. In the screening process, the blinded function in Rayyan was used to ensure an independent rating by the two raters. The raters were in complete agreement on 49 studies. Of these 49 studies, the raters agreed to include 13 and exclude 36 with reasons, and there were 5 studies on which the reviewers disagreed regarding inclusion. Cohen's kappa was calculated, and the results showed substantial agreement (0.77). Most of the excluded studies were excluded based on not being identified as a phenomenon of interest.

The second author resolved the five studies in conflict; subsequently, all five studies were included. The study selection phase followed the implementation of the SPIDER framework and inclusion/exclusion criteria.
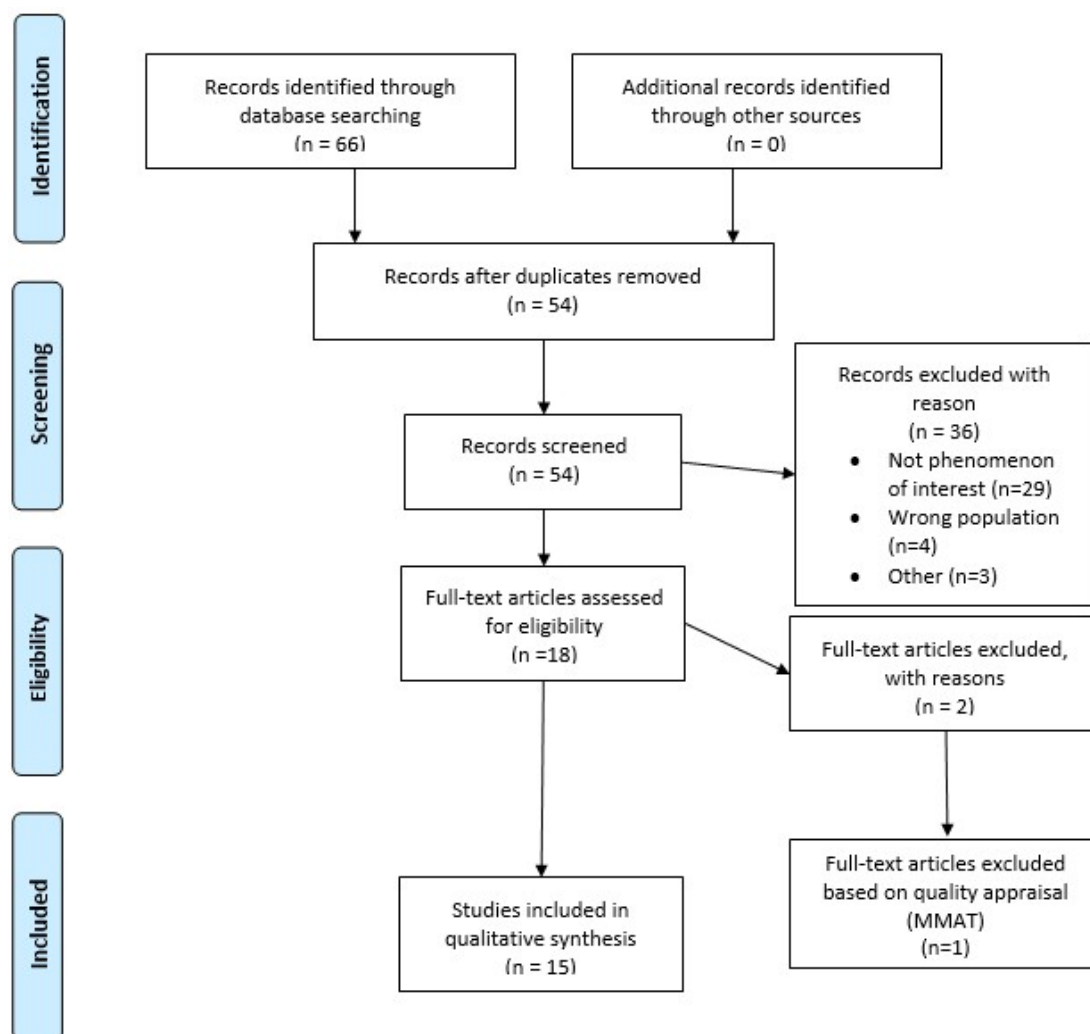
Figure 1. PRISMA flowchart.

2.3. Data Extraction and Quality Assessment

The next phase had parallel objectives. The first author read the full text of the 18 included articles using the SPIDER framework as a guideline and extracted the pertinent data. The first author designed a data extraction sheet inspired by one used and piloted in a previous systematic review [30] but adapted to suit this study's aim and research questions. As previously noted by Kraus et al. (2020) [34], using and adapting the data extraction sheet to the specific study is an important step.

The following data were extracted from the studies: (1) author/year, (2) country, (3) type of school placement, (4) school year, (5) participants, (6) methods, (7) summary of research focus, and (8) summary of outcome/study findings. The information was incorporated into the data extraction sheet. During the full-text reading and data extraction phase, the first author identified two studies that were not eligible for inclusion based on inclusion and exclusion criteria. The exclusion of the two studies was discussed among the three authors and led to an agreement. Subsequently, 16 studies were eligible for inclusion after the full-text and data extraction phases. The data extraction of the 16 eligible studies is presented in File S1, Data extraction sheet.

In the next phase, the quality of the 16 included studies was assessed. The authors assessed four, five, and seven studies individually, and the quality assessment was discussed before and during the process if questions arose. To assess study quality, we used the Mixed Methods Appraisal Tool (MMAT) version 18 [33]. The MMAT is a checklist for quality appraisal designed to support and be valid for mixed-methods systematic research

reviews. Since we included qualitative, quantitative, and mixed-methods studies, we decided to use this tool. The checklist includes five methodological quality criteria for each category of study design (qualitative, quantitative randomized controlled trials, quantitative non-randomized, quantitative descriptive, and mixed methods) and two criteria for all types [35].

The results from the individual quality assessment were discussed among the authors. To increase validity, the authors cross-validated the individual quality assessment. One discrepancy was identified during cross-validating, which was resolved in a discussion among the authors. Following the instructions of the MMAT, one of the studies by Balfe and Ní Bhroin (2022) [36] was not further appraised since the study did not state a clear research question or the collected data did not address the research question, which are the first two screening questions in the MMAT. The first author compiled the results of the individual quality assessment in a sheet (File S2, *Quality Assessment, MMAT*). We decided to include all studies in the synthesis if they fulfilled the first two general (for all research types) screening questions (presented above). Subsequently, 15 articles were included in the data synthesis.

In both phases (data extraction and quality appraisal), studies that involved a combination of methods were assessed as mixed methods only if the authors defined the study as a mixed method and used a specific design of mixed methods following Creswell [37–39]. In two cases, Macdonald et al. (2021) [40] and Minz (2021) [41], a combination of interviews and questionnaires were used in the studies. However, since the findings were weighted towards qualitative data collection, the appraisal was completed based on the specific questions directed to qualitative research in MMAT.

2.4. Data Synthesis

The included studies were synthesized to answer the research questions. We assessed the data and implemented a thematic summary approach. Thematic summaries, also called narrative syntheses, often combine research with qualitative, quantitative, and mixed methods and emphasize meaning-making and a more holistic approach [42]. The synthesis approach is also consistent with Barnett-Page and Thomas's (2009) [43] definition of textual narrative synthesis, which compares results across several studies. To increase validity, the second author finalized the synthesis findings, which were then cross-validated by the first author.

3. Results

The result chapter starts with a summary of the included studies' characteristics (including quality), answering RQ1. This is followed by a narrative synthesis of the findings from the included studies to answer RQ2 and RQ3.

3.1. Characteristics of the Included Studies

Most of the included studies (10) [44–53] were conducted in the USA. Two studies were conducted in Europe (UK [41] and Ireland [54]) and two studies in Australia [40,55]. One study was implemented in Hong Kong by Ho et al. (2018) [56]. In nine of the studies, the focus was solely on general school placement [40–42,46–48,50,55,56], and in three studies, the focus was on special school/group [49,53,54]. In three cases, the studies included both general- and special school placement [45,51,52]. Most of the studies focused on primary/middle school. Two studies solely focused on secondary school (Kucharczyk et al., 2015 [48]; Probst and Walker, 2017 [49]), and one study by Able et al. (2015) [44] included a combination of primary, middle, and secondary school. All studies included in-service teachers and/or SEN teachers. In seven studies [41,44,46,47,49,50,55], a combination of participating professionals (e.g., teachers, paraprofessionals, and school leaders) participated. Students with autism were involved in seven [45,48–52,56] of the included studies. One study by Strieker et al. (2012) [51] had a "whole school" approach, including students, teachers, paraprofessionals, school leaders, and SEN teachers.

None of the studies implemented a specific mixed-methods design (e.g., convergent design, sequential explanatory design, mixed-methods intervention design). Five of the studies [40,41,44,48,53] were defined as using a qualitative methodological approach (including Minz et al. (2021) [41] and Macdonald et al. (2021) [40], described in the data extraction and quality appraisal section). Five studies [45,51,54–56] were defined as quantitative descriptive, two [46,49] as quantitative randomized, and the last three [46,49,52] as quantitative non-randomized. One of the studies, Strieker et al. (2012) [51], had a longitudinal approach, following the schools for three years.

3.1.1. Research Focus

The studies' research focus was varied. Four studies [44,48,53,54] explored general and SEN teachers' views of how professional development efforts could be designed to support and develop practice. Seven studies [40,41,46,47,50,55,56] focused on developing teachers' learning, knowledge, skills, and teacher's efficacy to advance strategies to educate students with autism and develop an educational environment with increased wellbeing. As such, the focus was on teachers' attitudes and the development of their practice. Some studies [45,49–52,56] focused on the outcome for teachers in combination with students' outcomes regarding achievement, development, and wellbeing.

3.1.2. Quality Appraisal

The MMAT tool was used to appraise study quality (File S2, *Quality Appraisal, MMAT*). The instrument has the potential to cover and assess heterogeneous studies. All 15 included studies have clear research questions (or aims), and the collected data allows them to address the research questions. These two first screening questions are general and for all research types. Concerning the specific screening questions (based on the research type), the quality appraisal results indicated the included studies' overall high quality. Regarding the studies with qualitative methodology [40,41,46,48,53], all five studies were assessed as having an appropriate approach (qualitative), and the data collection methods were assessed as adequate to address the research questions. Four of the studies [40,44,48,53] were evaluated as having findings adequately derived from data and interpretation sufficiently substantiated by data. The four studies were also assessed as having coherence between data sources, collection, analysis, and interpretation. These quality criteria were not appraised as fulfilled in one of the studies by Mintz et al. (2021) [41]. The quality appraisal of the five studies [45,52,54–56] defined as quantitative descriptive showed that all studies were assessed as having relevant sampling strategies, samples representing the target population, and appropriate measurement. One study, Strieker et al. (2012) [51], did not fulfill the quality criteria of having a low nonresponse bias, and Ho et al. (2018) [56] were appraised as not having sufficient statistical analyses. The results were mixed regarding the quality appraisal of the two studies, defined as quantitative randomized control trials [47,50]. Sam et al. (2021) [50] assessed it as including appropriate randomization, comparable groups at baseline, complete outcome data, and the participants adhering to the intervention. One of the quality criteria—blinded assessors to the intervention—was not fulfilled. However, this is clearly stated and explained in the study. Johnsson et al. (2021) [47] were appraised as only fulfilling one of the quality criteria, namely: participants adhere to the intervention. The quality appraisal regarding the three [46,49,52] quantitative non-randomized studies shows that two of the studies [47,53] fulfilled all five quality appraisal criteria. As such, the studies [46,52] were assessed as having a representative target population, appropriate measures, complete outcome data, confounders accounted for in the design and intervention, and the intervention being administered as intended. Concerning Probst and Walker (2017) [49], the quality appraisal indicated that two criteria were not sufficiently implemented: representative target population and confounders accounted for in the design and intervention. This was because the study only included one student in the single-case research design.

To summarize, nine of the included studies [40,44–46,48,52–55] were appraised as fulfilling all (seven) of the quality criteria and four of the studies [49–51,56] fulfilled the majority (six or five) of the quality criteria. However, two of the studies [41,47] were appraised, fulfilling three [47] or four [41] of the quality criteria.

3.2. Findings Synthesized Result

This section presents the synthesized findings to address RQ2 and RQ3.

3.2.1. Design and Implementation of Professional Developments Efforts

As described earlier, some studies focused on exploring teachers' views on professional development [44,48,53,54]. The findings suggest that teachers find it essential to have an autism-specific focus [48,53,54] and seek a connection between professional development and practice [44,53]. The latter is further reported by Williams et al. (2021) [53], conveying that teachers find it important to attend to the professional development of their choice based on their needs. The collaborative [44] and ongoing [53,54] aspects of professional development are deemed essential. One of the studies [44] identified the importance of including several professional groups (general teachers, SEN teachers, and support staff).

The studies that included implementing different professional development efforts reveal a vast range of different models of professional development efforts. Moreover, the professional development efforts presented a variation of focus areas and content, where some studies are more general (e.g., teachers' self-efficacy, knowledge, and evidence practice) [46,47,50] and others more specific (e.g., functional behavior assessment [55], follow-up coaching [49]).

3.2.2. Professional Development Efforts Key Benefits

An increase in teachers' understanding of autism as a result of professional development implementation was reported by Bertuccio et al. (2019) [46]. However, it should be noted that the increase in autism understanding was not sustained over time. Teachers increased self-efficacy, resulting from professional development efforts, was a key benefit reported in several studies [40,41,46,47,55]. The impact of a professional development effort on teachers' self-efficacy is illustrated in Bitska et al. (2017) [55], where a significant relationship between confidence, self-efficacy, and overall performance in their work as educators was identified. In the study by Sam et al. (2021) [50], the key benefits of professional development were reported to convey increased use of evidence practice among teachers and that the specific professional development investigated can be implemented in general education. The importance of letting daily experiences and practice inform professional development has been described earlier. This is also reflected in the key benefits of the findings of implemented professional development efforts. Applying and integrating the learned skill or practice in the classroom and teaching students with autism was essential for a positive outcome [40,45,52,56]. This can be illustrated by the findings of Ho et al. (2018) [56], which suggest that the most prominent results were related to the teachers that could apply their newly learned skills directly in their classrooms.

As described earlier, the outcome for students was reported directly and explicitly in some of the studies [45,49–52,56]. The key benefits connected to students with autism vary. However, findings suggest that students develop their writing abilities [45], their ability to recognize emotions [56], and increased independence [49]. Teachers' participation in professional development entailed positive outcomes for students learning goals [50] and participation in co-taught inclusive classrooms [51].

4. Discussion

The first research question addressed in this study focuses on what characterizes studies around professional development efforts to enhance teachers' competence in teaching students with autism. Firstly, the overall limited literature in this area is concerning and should be addressed. Moreover, the results show that there is a predominance of

research conducted in the USA, implying that there is a need to develop the research area in developing countries as well as in Europe and Asia. Notably, none of the studies included were conducted in the Nordic countries, despite Nordic policy and legislation regarding all children's right to high-quality education. Research on teachers' capabilities to teach autistic students poses several challenges. The lack of research-based suggestions for teachers to develop effective learning opportunities for students with autism is a growing global problem; the number of students with these disabilities and the requirements for inclusive education are increasing. The inclusive shift requires that every teacher be prepared to teach autistic students in their classroom. Concurrently, schools often face difficulties meeting students with autism education needs [24], and teachers feel unprepared to educate these students [9,13,15]. Hence, how to approach the different needs of students with autism in educational settings is still an unsolved challenge. Therefore, further educational research is needed in this field. Furthermore, what the inclusive classroom offers students with autism must also be considered in line with inclusive policy.

Interestingly, only two studies focused on secondary education, implying a need for more research. This is important to acknowledge as problematic since previous studies have emphasized that adolescents experience difficulties maintaining social relations in inclusive education [18]. In addition, sixth and seventh-grade students face various difficulties, resulting in less inclusive school placement [19]; this suggests that further research is needed to understand what challenges autistic students face in this age group.

Moreover, in terms of methodology, most studies applied a quantitative approach. None of the included studies had a specific mixed-methods design, which is surprising since mixed methods are suggested to be an approach suitable to meet the complexity of multilevel systems such as health care [57] and education [17]. Furthermore, a longitudinal approach was only identified in one of the included studies [51]. As such, there needs to be more research exploring the sustainable effects of teachers' participation in professional development efforts. This result aligns with previous studies suggesting a need for longitudinal research in education [58].

The second research question addressed the design and implementation of professional development to promote students' learning. It was not possible to find a definite answer to this question. The studies mainly focused on the teachers' attitudes, self-efficacy, and knowledge. The direct relationship between professional development and changes that enhance autistic student learning possibilities could only be found in six of the included studies. However, more indirectly, professional development efforts focusing on increasing teachers' self-efficacy may affect the school situation for students with autism. Reducing stress [5] and possibly preventing burnout [6] for teachers may lead to positive outcomes for students learning in the long run. Indeed, in addition to decreasing teachers' stress, a consulting intervention was found to increase teachers' engagement and positively affect students' IEP outcomes [5].

Admittedly, the teachers reported that they felt the effect was increased if the professional development was carried out at their school and addressed their challenges in this context. The findings suggest that a more transformative approach [59] to professional development efforts is preferable. This corresponds with previous research suggesting that the collective growth of teachers participating in professional development efforts should be the focal point for developing competence [17,59].

Our third research question addressed the main findings regarding what matters to develop teachers' competence to teach autistic students. This targets the result above; the professional development design also impacts the possibility of teaching students with autism. If it is placed in the teachers' context and focuses on the challenges teachers meet at their school, the training matters to a greater extent. Given what is known about the difficulties experienced by students with autism [13,20], as well as by their teachers [2,9], our findings highlight what could be crucial for stakeholders when creating effective practices and equity for all students. Another key factor was the teachers' autism knowledge, which was essential for understanding how to design instruction in a classroom for autistic

students. Even if the main findings have a focal point related to teachers and their learning, the outcome of the students was reported and measured explicitly in six studies.

4.1. Limitations

There were several limitations in our systematic review and synthesis. First, selection bias may have occurred, as we only searched three databases. This may have affected the number of identified records, yielding fewer articles for the synthesis. However, since we believe that article accessibility is crucial for teachers' development, we sought open-access articles, which limited the useable databases. The time intervals might narrow the result; nevertheless, 10 years captured relevant studies to synthesize.

Second, not including book chapters and gray literature may have affected the review outcome. Also, not hand-searching journals may have compromised the number of records identified. Third, only articles written in English were included. Fourth, most of the included studies originated from the USA, which may have affected the result. Lastly, the failure to distinguish between the variations in students' support needs (i.e., autism in combination with other disabilities such as ID) in connection with teaching approaches is a limitation that needs to be addressed. Despite these limitations, this study provides a starting point for research regarding teachers' participation in professional development efforts.

4.2. Implications for Practice

This review and synthesis can guide practices in various ways to design and implement professional development efforts across different school settings, from primary school to secondary school, and for special school students and general education students. Furthermore, school leaders can use this study to plan and execute school improvement strategies, use the results to ensure sustainability, and implement prerequisites.

5. Conclusions

We conclude that professional development efforts can increase teachers' capacity to teach students with autism and that they improve their knowledge and skills, making them more confident to promote equitable education for students with autism. We also concluded that professional development efforts involve different purposes, such as student learning, teacher and student learning, or teacher learning in relation to in-service education. This aligns with the global goal to include this student group in ordinary school settings, as teachers often lack the skills and self-efficacy to do so. Therefore, teachers should be provided with research-based knowledge on developing the necessary skills to teach students with autism across society.

However, even if the outcomes of students were incorporated to some extent, future research should continuously strive to develop more inclusive research where students' outcomes are the focal point and that they are active participants in research projects.

At the end of the day, it is their education and learning opportunities that we should strive to develop.

Notably, longitudinal and follow-up studies are needed. This lack of research causes difficulties in understanding and investigating the effect of schooling on autistic students in primary and secondary education.

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