Review

Navigating Self-Reflection for Aspiring Special Education Teachers: A Scoping Review on Inclusive Educational Practices and Their Insights for Autism Education

Kamilla Klefbeck

Faculty of Education, Department of Special Education, Kristianstad University, 291 88 Kristianstad, Sweden; kamilla.klefbeck@hkr.se

Abstract: This scoping review investigates the pivotal role of self-reflection in enhancing the skills of prospective educators, with the intention of drawing conclusions on how this aspect can contribute to improved teaching for students with autism. Two guiding research questions include: (1) How do targeted strategies in teacher education influence self-reflection among prospective special education teachers, and to what extent do these strategies enhance their reflective capacity, as indicated by the reviewed studies? (2) What research gaps exist regarding integrating reflective practice into teacher education programs to enhance prospective special education teachers' self-reflection and professionalism? Finally, conclusions drawn from the results are analyzed through the framework of core aspects defined in the ICD-11, the eleventh edition of the 'International Classification of Diseases'. This approach provides insight into how the conclusions can be applied to nurture self-reflection of future special education teachers, particularly emphasizing the facilitation of participation and learning for students with autism. Utilizing a scoping review methodology, the study comprehensively explores this vital area, adapting search strategies as needed. Several of the included studies suggested that to effectively contribute to the development of well-considered action strategies in encounters with students in a special education context, including autism education, it is not enough to incorporate reflective practice; the teacher candidates also need feedback and guidance. In conclusion, this research underscores self-reflection's pivotal role in bridging theory and practice, enhancing the preparation of future educators for their work with diverse student populations.

Keywords: scoping review; autism education; special education; self-reflection; educational interventions; teacher education; inclusive educational practices

1. Introduction

Recognizing ASD as a spectrum disorder underscores the need for individualized assessments and interventions tailored to the unique strengths and challenges of each person. The spectrum framework encourages educators, practitioners, and researchers to consider the heterogeneity within ASD, fostering a nuanced and personalized approach to understanding and supporting individuals along the spectrum [1]. Students with autism often face challenges in verbal communication and may instead express themselves through behaviors or non-verbal signals. A recent study on lesson development for students with autism [2] revealed that teachers' reflections on their own actions enhance their ability to perceive and interpret the behaviors of students with autism as subtle signals as forms of communication. This, in turn, had a significant impact on the students' opportunities for participation in the classroom. Building on these findings [2], I, as a university lecturer in special educational needs teaching, embarked on an exploration into the significant role of self-reflection as a tool for enriching the competencies of educators in training, with a particular emphasis on those preparing for the instruction of students with diverse requirements, including autism.

In the spirit of promoting inclusion and valuing differences, it is crucial to acknowledge the diverse strengths associated with ASD. For instance, many individuals with ASD demonstrate exceptional visual perception, mathematical aptitude, honesty, and loyalty [3]. These strengths contribute to the rich tapestry of abilities within the autism community.

Furthermore, it is imperative to avoid stereotyping individuals with ASD. Autism is a spectrum, and there is no singular form of ASD. The experiences and needs of individuals with autism vary widely, just as they do for neurotypical individuals. Recognizing this diversity and promoting a comprehensive understanding of ASD is essential for fostering truly inclusive educational practices.

The impairments associated with ASD strike at the core of what is commonly considered a given in human experience—the ability to engage in social communication. Mintz [4] emphasizes that this not only challenges educators to navigate uncharted territories but also underscores the urgency of equipping prospective teachers with strategies that facilitate self-reflection. Understanding how teachers grapple with the intricate interplay between expert knowledge and on-the-ground experience is crucial for the evolution of effective teaching methodologies. As the population of children with ASD is not a homogeneous group [1], a creative and flexible approach to learning is required. This article takes a unique perspective by emphasizing the critical role of reflection in inclusive teaching. Within the realm of self-reflection, I draw inspiration from Mintz's [4] foundational work to provide conceptual support to navigate the complexities of working with individuals with Autism Spectrum Disorder (ASD). In Mintz's [4] research, the inner room where teachers' self-reflection is given space is defined as the area of professional uncertainty. By dealing with uncertainty, teachers can avoid the pitfalls of stereotyping individuals with ASD [4]. Therefore, this article will explore possibilities for giving teacher students access to self-reflection, acknowledging that autism is indeed a spectrum with a wide range of experiences and needs.

Klefbeck and Holmqvist's [2] research findings about the relation between opportunities for self-reflection and capabilities to perceive and interpret the behaviors of students with autism as subtle forms of communication align with the broader discussions on the challenges and opportunities of inclusion. By valuing the individual experiences and needs of students with ASD and encouraging educators to reflect on their teaching practices, we can create learning environments that celebrate diversity and promote meaningful educational experiences for all.

In light of the growing importance of inclusive education, this exploration holds particular relevance for educators seeking to navigate the intricacies of teaching within the spectrum of autism. In this article, Wolrath Söderberg's [5] definition of self-reflection is used, encompassing self-reflection as an analytical tool that enables space for challenging questions and encourages contemplation of previously overlooked matters. Teachers instructing students with extensive support needs often feel uncertain about how to address their learning requirements. To establish effective and inclusive learning environments for students with ASD, Holmqvist (2022) emphasizes that teachers must acquire knowledge about the strengths and challenges within the spectrum. However, possessing knowledge alone is insufficient for dismantling barriers to learning. Prospective teachers require the capacity to reflect beyond the truths that are easily taken for granted. Holmqvist [6] contends, "… a child's needs should be taken seriously even if the needs contradict what is perceived to be best for the majority of children." (6, p. 40). Therefore, teachers need not only knowledge of strategies and diagnostic criteria but also the ability to reflect on presupposed truths.

The significance of an aspiring teacher's capacity to pause and engage in reflection during challenging situations can also be attributed to Schön's [7] concept of "reflection-in-action". This concept encompasses the consideration of all experiences, including those of a tactical nature rather than purely intellectual, as they unfold in the moment. When this innate practical knowledge remains unexpressed, there is a potential risk that prospective teachers may not harness their full capabilities in their future profession, particularly in the

context of inclusive educational practices. In the realm of autism education, this capability assumes even greater significance. Pupils with autism often employ behaviors that may be construed as challenging to communicate their desires and needs [1]. The teacher's reflective activities resonate with Dewey's [8] interpretation of pragmatism, as Dewey highlighted the teacher's dual role as a researcher and educator, advocating a perspective that intertwines research and practice [8]. In this view, teachers bear the responsibility of continuously refining their teaching based on a reflective analysis of its outcomes in practice.

Within the domain of general didactics, a prior research review conducted by Beauchamp [9] delved into research outcomes pertaining to self-reflection within teacher education. Beauchamp's [9] review highlighted the need for increased guidance for students and emphasized a noteworthy observation: even though university instructors often possess teaching backgrounds, it's not always straightforward for them to translate their personal experiences of reflective teaching to their future students. Beauchamp's [9] work further revealed the multifaceted nature of reflection approaches, with emerging new strategies adding complexity to summarizing or providing guidelines for university instructors tasked with instructing teacher students in the art of self-reflection.

Expanding upon the groundwork laid by Beauchamp [9], this study ventures into the realm of special education. It seeks to scrutinize Beauchamp's [9] findings through the lens of special pedagogy, considering contemporary advancements, including the integration of both emerging technologies and traditional reflection methods. Anchored in the philosophies of Dewey [8] and Schön [7], this study's principal objective is to unearth insights from previous research regarding reflection in the training of special education teachers. Its objective is to aid educators in special education teacher training programs in shaping an educational approach that cultivates students' self-reflective skills, placing a specific emphasis on specialization in autism education.

1.1. Aim and Research Questions

Building upon the assumptions outlined by Klefbeck and Holmqvist [2] regarding the connection between teachers' reflections on their own actions and their capabilities to interpret unpredictable or challenging behaviors as subtle forms of communication, this scoping review aims to contribute knowledge on the role of self-reflection as a tool to enhance future special educational need teachers' didactical preparedness for inclusive education. It places particular emphasis on its didactic implications for students with diverse needs, including those with autism. It achieves this by consolidating prior research findings, methodologies, approaches, and intervention outcomes that have been examined to offer teacher candidates support in reflecting on their professional practice. This process helps them cultivate a self-reflective approach when encountering students or teaching situations that present challenges.

Research Questions

RQ:1 How do targeted strategies in teacher education influence self-reflection among prospective special education teachers, and to what extent do these strategies enhance their reflective capacity, as indicated by the reviewed studies?

RQ:2 What research gaps exist regarding integrating reflective practice into teacher education programs to enhance prospective special education teachers' self-reflection and professionalism?

2. Materials and Methods

As described by Munn et al. [10], a scoping review, in comparison to a more traditional systematic research review, is a research approach distinguished by its pragmatic search across databases. It is characterized by broader inclusion criteria and a wider scope of literature. According to Arksey and O'Malley's [11] interpretation, the scoping review approach is a model for those who want to explore their area of interest using a broader

approach, based on a research area that may still be partly unknown. The scoping method requires users to rigorously account for the steps and considerations taken, but a more lenient selection can be allowed in the criteria for including the studies to be included in the review [11]. The review presented here followed Arksey and O'Malley's [11] five-stage iterative process for conducting a scoping review. These five stages include: (1) pinpointing the core research question; (2) identifying pertinent studies; (3) selecting studies; (4) charting the data; and (5) gathering, summarizing, and presenting the findings. As outlined by Munn et al. [10], the results of a scoping review allow authors to identify and analyze knowledge gaps, facilitating the identification of future research initiatives.

2.1. Pinpointing the Core Research Question

Before initiating the search, I checked if a similar study was already being conducted by other researchers, i.e., if a similar search was already registered on Prospero (a website for registering ongoing research reviews) [12]. For the field in my search on Prospero, I entered the area of education. For the method, I entered systematic review or meta-analysis. To broaden the scope, I entered the search term "critical reflection" in any context. I received only seven hits. Since none of these papers included teachers or prospective teachers, but instead focused on self-reflection in other areas, such as healthcare, I found it meaningful to continue the search.
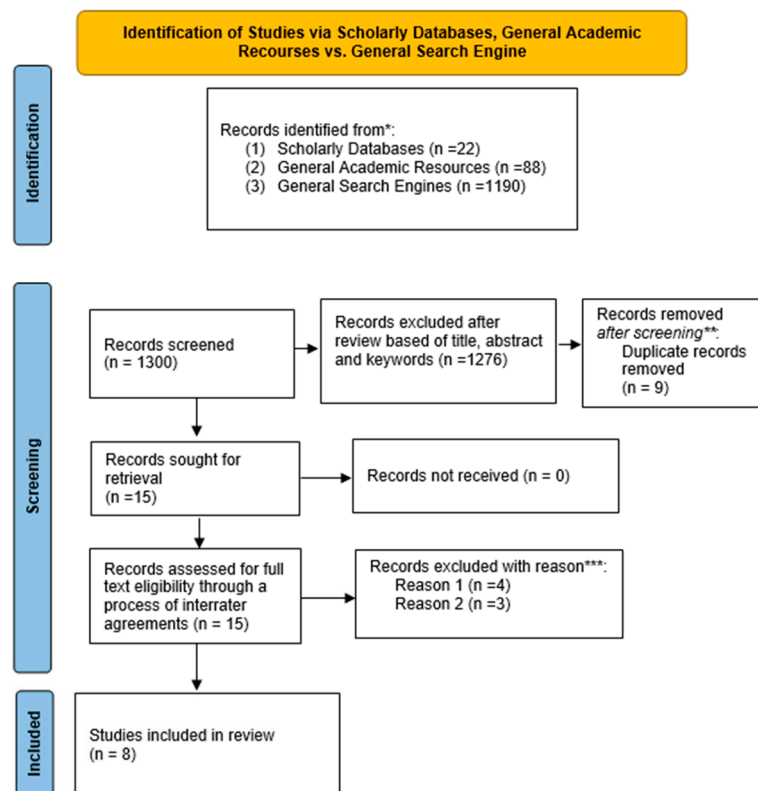
2.2. Identifying Pertinent Studies

To identify appropriate strategies, I conducted a literature search using PICO to delineate the search parameters. In this context, P (population) refers to the target group, I (intervention) specifies the method being examined, C (control) may not always be relevant but pertains to comparisons with alternative approaches, and O represents the anticipated or evaluated outcome, signifying the "Outcome" of the studies [13]. Through the lens of PI(C)O, the study's initial research question, RQ:1, resulted in: How can reflective practice (I) promote self-reflection (O) among special education teacher students (P)? The reason for adding "special", to the population in focus for the search was that I found Beauchamp's literature review on reflection in general teacher education [9]. Beauchamp [9] points out that there is a research gap concerning self-reflection in teacher education, which needs to be explored from various perspectives and contexts. In this overview, this is followed up by focusing on self-reflection within the context of educating future teachers in a special education training context. Beauchamp's review covered the period from January 2005 to 2014 [9]. My search overlapped and extended beyond this, covering studies from 2010 to 2022. The reason for setting the time frame for 2010 was the dynamic changes and advancements in the field of special education, particularly in the teaching of students with special educational needs, during that time period. These changes were driven by research findings, technological innovations, and evolving pedagogical practices. By including studies from 2010 onwards, the aim was to capture the latest insights and strategies that had emerged at that time, ensuring that the research reflected the then-current state of knowledge in the field.

In all of the databases, combinations of the following search terms were used: student teachers, student teachers/students in special educational needs and disabilities (SEND) teacher education, reflective practice/critical reflection, critical thinking/professionalism. (For clarification see Table 1).

The search was conducted following the PRISMA guidelines [14]. To enhance comprehension of the review methodology, please refer to Figure 1, which incorporates minor contextual adjustments as described in the footnotes. The initial selection criteria encompassed scholarly articles peer-reviewed and published in English within reputable academic journals. Due to the limited number of initial search results, I broadened the search strategy, including explorations conducted on platforms such as Summon and Google Scholar (for clarification, please see Figure 1).

Table 1. Database vs. Search Engine: Comparative Analysis.

Database vs. Search Engine	Population	Approach/Intervention	Results/Outcome
Education Research Complete (Via Ebsco)	Student teachers OR teacher education OR pre-service teacher AND "Special Education" OR disabilities OR "special needs"	Reflective practice OR critical reflection	professionalism OR Critical thinking
Academic Search Premier	(Student teachers OR teacher education OR pre-service teacher) AND ("Special Education" OR disabilities "R "special needs")	Reflective practice OR critical reflection	professionalism OR Critical thinking
Web of Science	(((((PY = (2010–2022)) AND DT = (Article)) AND TS = (Student teacher* teacher education* preservice teacher*)) AND TS = (Reflective practice* critical reflection*)) AND TS = (professional* Critical thinking*)		
Summon	(Student teachers OR teacher education OR pre-service teacher) AND ("special Education" OR disabilities "R "special needs") Reflective practice OR critical reflection professionalism OR Critical thinking		
Google Scholar	((Student teachers OR teacher education OR pre-service teacher) AND ("special Education" OR disabilities "R "special needs") AND (Reflective practice OR critical reflection) AND (professionalism OR Critical thinking))		

Figure 1. PRISMA Flow Chart.

In all databases, I selected the options for "Scientific (Peer-reviewed) Journals", within the publication dates from 1 January 2010 to 31 December 2022, in English, in peer-reviewed

academic journals. The search was conducted on 27 December 2022 (and repeatedly checked on 2 January 2023).

2.3. Study Selection

2.3.1. Inclusion Criteria

Inclusion is contingent on meeting the following criteria:

- Empirical studies, including both qualitative, quantitative, and mixed methods research, published in English, and in peer-reviewed academic journals between 1 January 2010, to 31 December 2022.
- The study must involve teacher students in the field of education, specifically focusing on Special Educational Needs and Disabilities (SEND) teaching.
- The study must emphasize aspects of reflective practice [6], critical reflection, critical thinking, and professionalism to address challenging students or teaching situations.
- The study should encompass the criteria outlined above for inclusion.

2.3.2. Exclusion Criteria

- Studies that do not involve teacher students specializing in Special Educational Needs and Disabilities (SEND) teaching will be excluded.
- Studies that do not emphasize reflective practice, critical reflection, critical thinking, or professionalism in dealing with challenging students or teaching situations will be excluded.

Twenty-two records were identified through scholarly databases (Education Research Complete, Academic Search Premier, Web of Science), 88 from general academic resources (Summon), and a total of 1190 articles were identified through general search engines (Google Scholar). The inclusion and exclusion criteria were applied to the title, abstract, and keywords of the total 1300 articles. After eliminating duplicates, 15 articles remained. To ensure the quality of the 15 identified articles, a collaborative evaluation was conducted with the assistance of a co-evaluator. The expert engaged for this task is a globally recognized researcher in the field of special education. During this phase of the selection procedure, both researchers thoroughly reviewed the entire article. The procedure was conducted based on the predefined inclusion and exclusion criteria, and the researchers independently carried out the process. This collaborative effort occurred between 30 September and 6 October 2023. The outcome of the co-assessment revealed a dual agreement on 13 out of 15 articles, resulting in an 87.5% agreement rate, signifying a robust consensus regarding the subject under investigation. To further evaluate the reliability of this agreement, we computed Cohen's κ statistic [15], which yielded a value of 0.75, indicating a substantial level of agreement.

The reviewers' assessments differed in such a way that one reviewer (the author) wanted to include two articles, which the other reviewer (the experienced researcher) wanted to exclude. After both parties presented their arguments, they chose to include an article that was not strictly scientific, which, according to Arksey and O'Malley's [11], could be appropriate within a scoping strategy if the researchers are rigorous in reporting this strategy. However, they decided to exclude the other article as the emphasis on the contribution was far too distant from the focus area of self-reflection.

3. Results

To fulfill the aims and contribute knowledge on the role of self-reflection as a tool to enhance the capabilities of future special educational needs educators, the final step of Arksey and O'Malley's [11] five-stage iterative procedure was followed. In alignment with stage 5 of this process, I now proceed to gather, summarize, and present the findings. Consequently, the results presented (see Table 2) are labeled: Author(s) (year of publication, study location); Intervention type, and comparator (if any); Study populations; Aim of the study; Methodology; Outcome measures; and Important results (for clarification of the included studies and an overview of the data charting, see Table 2).

Table 2. Presentation and Outcome of the Included Studies.

Author (Year) Study Location	Intervention Type, Comparison, If Any (Duration)	Study Population	Aim of the Study	Methodology	Outcome Measures	Important Results
(A) DeBettencourt & Nagro (2019) [16] Location: An undisclosed Mid-Atlantic university.	Providing teaching objectives with specific instructions for completing reflective journal entries during their field experiences. (Two 10-week hands-on training in real classroom settings).	Six female special education candidates.	To determine if special education teacher candidates enhanced their ability to reflect by repeatedly engaging in reflective practice during two field experiences.	A concurrent nested mixed-methods design. This design involved collecting both qualitative and quantitative data simultaneously to address various research questions related to the candidates' reflective abilities and practices.	The authors employed a one-way repeated measures analysis of variance (ANOVA), extracted through document analysis, to evaluate any variations in the reflective ability scores across the four special teachers' time points.	The candidates' self-efficacy and confidence increased, suggesting a positive perception of their abilities, even though the objective measurement of their reflective abilities did not show a significant change.
(B) Caruana (2014) [17] Location: Regis University, located in Denver, Colorado, USA.	Applying the Ignatian Pedagogy Paradigm (IPP) to the reimagined curriculum in the graduate special education. A reflection journal serves as a tool to encourage critical self-reflection. (A retrospective analysis without time frame.)	The article is more descriptive than empirical, and therefore, the number of participants who engaged in the interventions described is not specified.	The creation of a learning environment that promotes reflective practitioners and educates future special educators in social responsibility.	A meta-reflection strategy within the teacher candidates' written reflection was employed to gain an understanding of how reflection journals could be utilized as a tool for self-reflection.	Was not explicitly expressed in this article.	The authors emphasize that the interventions have not only resulted in skills and knowledge but also in preparation to work with a vulnerable student population.
(C) Catapano & Slapac (2010) [18] Location: a Midwestern university, USA.	Assessing the impact of one standard teacher preparation program and one program with an additional component of awareness activities (December 2004 to October 2008.)	The students in the study belonged to two teacher preparation programs targeting the teachers' abilities to meet the needs of diverse learners.	The study aimed to assess the difference between two teacher preparation models and their impact on preservice teachers' self-reflection.	Twenty randomly selected portfolios from each of the two teacher preparation groups were qualitatively analyzed to determine if there was a significant difference between the two groups.	The focus of the analysis was on qualitative quotes related to culture and diversity.	There was no distinct disparity in the pre-service teachers' perceptions of their students' needs or in their involvement in self-reflection or discussions concerning the support of diverse learners. However, a deficiency was identified: teacher candidates require guidance in distinguishing between description and reflection.
(D) Chapman (2014) [19]. Melbourne, Australia	A multimedia-based instructional approach using the PulpMotion software. This approach involves creating online video lectures (anchored instructions) to convey key concepts in the area of early childhood special education. The study spanned two semesters.	26 general education majors from the Spring semester and 26 general education majors from the Fall semester of the same year. All participants were enrolled in a special education course.	Utilizing new technology, with the aim of fostering self-reflection and increased engagement in pre-service educators online course participation. This engagement focused on fundamental understanding and knowledge in the field of special education.	Use of software to create multimedia instructional content. This content is designed to engage pre-service educators and encourage their active participation in online discussions.	Measurement of participants' involvement in online discussions and their access to non-required reading materials within the online course environment. Summative data from different semesters are compared to assess the impact of the instructional approach.	One of the animated characters proved to capture the engagement of the teacher candidate. The PulpMotion tomato host encouraged students to reflect on their own understanding of the subject matter, fostering a deeper level of engagement with the material and discussion.

Table 2. *Cont.*

Author (Year) Study Location	Intervention Type, Comparison, If Any (Duration)	Study Population	Aim of the Study	Methodology	Outcome Measures	Important Results
(E) Cohen-Sayag & Fischl (2012) [20] A teacher education college in Israel.	Structured journaling and reflective writing exercises were assigned to pre-service teachers as part of their teacher education program. (Duration: one year, encompassing two semesters.)	24 pre-service teachers in their third year of training, enrolled in a special education program	Investigate the relationship between ongoing reflective writing activities, changes in pre-service teachers' reflective writing, and their teaching practices during a year of teaching experience.	Longitudinal and employed both quantitative and qualitative methods.	Document analysis of the pre-service teachers' journals (reflective, descriptive, and critical). Point of analysis: Alterations in the reflective writing of pre-service teachers.	The study emphasized the significance of previous experience and environment in influencing reflective practices. The authors suggested that a higher level of reflective thinking could result in enhanced teaching outcomes.
(F) Golloher & Middaugh (2021) [21] A university in Northern California, USA	A case study involving the adaptation of the Diversity Dialogues framework for an online course. (Data were collected over four semesters.)	30 students in a course on inclusive education agreed to have their discussion responses included in the analysis.	To contribute knowledge by investigating methods to enhance reflection within an inclusive education online course.	A case study was designed to investigate how an online discussion course could enhance reflection and foster the characteristics of inclusive teachers.	Data from 30 participants were analyzed using thematic analysis, focusing on inclusive teacher characteristics and self-reflection on biases.	The extent of self-reflection among teacher candidates differed depending on three crucial elements: the central topic under consideration; the level of compassion associated with the issue; and how closely the topic aligned with the course's objective.
(G) Jones, (2010) [22] Victoria University of Wellington, New Zealand	An intervention aimed at improving resource teachers' skills, knowledge, and reflective practice abilities, to better support students with special needs. (Duration: within a two-year professional development program)	Resource teachers targeting students with moderate special needs, enrolled in a portfolio course (N = 168). The program team is responsible for the course (N = 4).	To provide a detailed analysis of the relationship between the course design and teaching of the professional practice portfolio and its impact on the learning and professional practice of resource teachers.	Four cycles of action research were conducted during the first four years of the implementation of the professional practice portfolio.	In post-portfolio interviews and questionnaires, the participants were asked to comment on how well the portfolio promoted their reflective practice abilities.	An essential aspect of the portfolio process was annotating evidence. This process compelled participants to articulate their thoughts during the selection process, fostering an interaction between their existing knowledge and newfound knowledge.
(H) Kurz & Batarelo (2010) [23] California, USA	The use of video cases as a pedagogical tool in teacher education. Duration: The video was unspecified; however, the participants analyzed 14 distinct videos.	The study population consisted of 27 elementary or special education preservice teachers attending a diverse university	To investigate the effectiveness of video cases in enhancing the education of preservice teachers, specifically to identify features of self-reflective practice during pre-service teacher training.	The participants watched video cases from the Best Practices database, discussed them as a whole class, and then individually analyzed different video cases through written, guided reflection.	The pre-service teachers' written reflection provided the primary data for the study.	The video supports intervention-enabled constructive features, including the modeling of teaching techniques and the focus on classroom management. The video approach enabled the educators to analyze and reflect on how different teaching strategies can be adapted to meet diverse needs.

Note: The article letters from the compilation above are used to indicate the sources of the research in the presentation of the results below.

The eight studies (A–H) explored various intervention types to promote and enhance prospective special educational needs teachers' self-reflective capabilities. These interventions varied in their design and duration but shared the goal of supporting teachers' ability to reflect on their teaching and become more aware of their practice.

To address research question one—'How do targeted strategies in teacher education influence self-reflection among prospective special education teachers, and to what extent do these strategies enhance their reflective capacity, as indicated by the reviewed studies?'—a three-step process was followed.

In the first step, the characteristics of each included study were identified to facilitate an understanding of the approaches used. The next step involved defining the overarching themes within the tested approaches. Finally, conclusions were drawn to evaluate how the targeted strategies influenced the self-reflective capabilities of prospective special education teachers.

3.1. Characteristics of Reflective Practice in the Included Studies

In all the studies included in the present scoping review, the characteristics of reflective practice are described in the introduction or background of each article. Below, the characteristics used in each article are presented to showcase the diverse perspectives used to comprehend the concept of self-reflective practice in the included articles.

Cognitive-emotional engagement. It is important for prospective teachers to integrate theory and practice, yet only a few teacher education programs have found systems that bring together this different perspective. This perspective is exemplified by the initial article (as alphabetically defined) authored by DeBettencourt and Nagro [16]. In article A, self-reflection is labeled as an activity that engages both cognitive and emotional experiences. This does not imply that self-reflection needs to be unconscious or spontaneous, as even conscious efforts of self-reflection can lead to an increased ability for reflective thinking [14].

Spiritual, Informed Decision-Making Tool. In the second article [17], the theoretical perspective takes on an extended dimension by incorporating religion or spirituality. Article B is featured in a Catholic journal, where the importance of self-reflection takes on a broader significance, emphasizing its role in transforming students from mere knowledge consumers into knowledge producers. Another aspect of self-reflection added in this study was that the efforts to promote teacher candidates' self-reflection aimed for it to serve as a tool for the prospective special educators' selection of research-based instructional strategies for students with disabilities [17].

Acknowledging Situations as Challenges: The third article [18] highlighted that reflective practice commences with preservice teachers acknowledging situations within their teaching practice as challenges demanding careful consideration and resolution. In article C, the initial step towards fostering meaningful reflection is the recognition of complex teaching scenarios, avoiding the assumption of immediate solutions. Additionally, in article C the character of critical reflection relies on the pre-service teacher's abilities to critically examine their teaching practices in terms of social justice and equity [18].

Inclusive Teaching Practices. Article D emphasizes the significance of self-reflection based on the assumption that the ability to engage in self-reflection enables teachers to understand and implement inclusive teaching practices [19]. In this context, inclusion is defined according to US federal legislation, which aims to place the student in an environment that is as inclusive as possible, considering the student's needs and circumstances.

Metacognition as a Reflective dialogue. Article E [20] starts with an understanding of the importance of metacognition and how to incorporate an inner reflective dialogue into pre-service teachers' teaching repertoire. The authors analyze the pre-service teachers' abilities to use reflective dialogue to develop a deeper understanding, which in turn can lead to more balanced actions in their future teaching practice [20].

Inclusive Readiness. In article F [21], the significance of self-reflection is highlighted as what enables the preparation of students to engage with students of diverse and varied needs, including those who present challenges. The authors of the article suggest that

prospective teachers might often find it easier to connect with certain students but more challenging to connect with others. The opportunity for inclusive readiness can enhance students' capability to engage with students with varying needs [21].

Continuous Professional Development. In article G [22], reflection is defined as a process where teacher students critically examine their past and current experiences, thereby constructing knowledge and developing an enhanced understanding for improved practice. Based on prior research, the authors describe that teacher educators may encounter varying levels of engagement and capacity for self-reflection among students. They emphasize that this could be partly due to how students' self-reflection is assessed. Relying solely on and evaluating students' written self-reflection may be insufficient. As a complement to this, the authors advocate for the use of portfolios to enable a comprehensive and more authentic assessment [22].

Recognition of Teaching Situations as Problems: Reflective practice, as described in article H, is portrayed as a process that commences with preservice teachers acknowledging situations within their teaching practice as challenges demanding attention and resolution. This initial recognition serves as the foundational step towards initiating meaningful reflection [23].

3.2. Approaches Tested to Promote Self-Reflection among Future Teachers

The characteristics of each study yielded two overarching themes defined through the thematic analysis.

Written Reflection. In article A, the study assesses the fusion of practical experience and theoretical knowledge by involving students in reflective journal activities centered on two rounds of case studies [16]. This study specifically focused on a cohort of female teachers enrolled in the special education teacher training program, and it spanned the duration of an entire academic year [16].

In article B, the use of written reflection is tested to enhance the preparedness of future special education teachers for their profession through an approach where groups of students are assigned to write journal entries based on their own experiences and reflections. The approach also incorporates a spiritual dimension, involving reflection in action inspired by the spirituality of Saint Ignatius and emphasizing conscious energy [17]. The authors highlight that these interventions have not only enhanced skills and knowledge but have also prepared individuals to work effectively with a vulnerable student population.

In article E as well, reflective writing is used as an approach in special education teacher training. However, in this study, it is emphasized that written reflection is not something that the teacher trainee can develop on their own, as they need guidance to cultivate self-reflection in their writing. The approach tested evaluates interventions that future special education teachers receive during the second and third years of their education, where they, with the support of a mentor, participate in discussions about experiences based on field notes taken during teaching practice for students with intellectual disabilities (ID) and ID combined with autism [20].

In article C and G, portfolios were used. In article G, the program is described as a collaborative portfolio approach. To gain a comprehensive view of students' competencies, authentic written evidence was compiled and gathered. The students were not alone in their reflective writing; they received support through peer collaboration, exercises with challenging questions, and guidance. The overall aim of the programs was to encourage reflection on practice and the evidence thereof [18,22].

Leveraging Digital Technology. In article D, a digital tool with anchored instruction is tested to support situated learning among a group of aspiring special education teachers [19]. The method involved students participating in internet-based discussion forums with a special education focus. Through various characters of fictional animated "news anchors", students were presented with news clips based on special education themes, tailored to the pre-knowledge revealed by their participation in initial exercises. The exercise encouraged students to reflect critically on the "news segments" presented, with a

particular focus on knowledge about children in need of special support and adaptation in education. To measure the outcome of the method, a control group was used that did not receive the intervention with humorous yet fact-filled news segments. Study F tested whether the specially designed online program increased the capacity for self-reflection among future special education teachers. This digital course element was part of a course on dialogue for diversity. The overall course element involved students in short activities focused on learning about diversity, followed by discussions, with an underlying intention to prompt and stimulate students' self-reflection. Students were encouraged to respond to their peers' posts in a discussion forum [22]. Study G underscores video cases as valuable digital aids for promoting reflective practice among future educators. The authors propose that video resources can assist preservice teachers in developing a deeper understanding of teaching, recognizing teaching challenges, and engaging in meaningful reflection to improve their teaching practices [23].

3.3. Influencing Self-Reflection: Targeted Strategies for Special Education Teachers

This scoping review has identified several key approaches and their outcomes in relation to supporting prospective special education teachers' self-reflection.

Written Reflection. Enhancing Reflection Through Writing. The activity of writing field notes based on experiences during practical field studies did not significantly impact the ability of future special education teachers to engage in critical reflection [16]. In the discussion, the authors highlighted that the opportunity to reflect on practice alone did not lead to notable differences among aspiring special education teachers. To effect change, teachers also require guidance in the reflective process. Students need to understand the essence of reflection and how it holds the potential to make a difference in practice. However, the written exercises did contribute to enhancing the confidence of future special education teachers in preparation for their upcoming teaching roles [16].

The approach where students were required to keep journal entries based on reflection in action [17] had, according to the authors, an impact on students' preparedness for their profession. An explanation for the effectiveness of the method, as stated by the authors, was that it involved not only the students but also active participation from their course instructors [17].

In the study where students received guided written reflection [20], it was found that the approach of providing students with guidance based on written field notes led to a change in participants' way of expressing themselves in relation to students in the teaching groups. Statistical analysis of participants' field notes showed that the qualitative level of participants' self-reflection increased through their participation in the exercises. At the same time, descriptive examples were provided of how participants' empathy and respect for students with disabilities increased [20]. The authors of the article emphasized the importance of written reflection, as they believed it enables participants to revisit and reflect upon events and incidents that have occurred.

In one of the studies involving portfolios [21] as evidence of students' authentic learning and reflection, the results showed that the main benefit of portfolio work was that it triggered enhanced learning among the students. The compilation of the portfolio enabled metacognition, where students reflected further based on their experiences and the conclusions drawn. According to the authors of the article, the portfolio work contributed to increased professionalism, personal maturity, and a sense of confidence in facing challenges within the profession [21]. In the other study, involving portfolios [18], a control group was employed to assess whether targeted instructions in the written portfolio work could impact the participants' ability for written self-reflection. The results indicated that the awareness-raising elements intended to enhance participants' self-reflection did not have the intended effect, as there was no significant difference observed compared to the control group. One conclusion drawn from the study was that instructions alone were insufficient; teacher candidates also required guidance to learn how to distinguish between merely describing events and engaging in more self-critical reflection [18].

Leveraging Digital Technology as a Tool. The study that employed imaginary humorous news anchors to support students' knowledge of adaptation and teaching strategies for children in need of special support yielded positive results on students' academic learning [19]. Simultaneously, it ignited a desire to reflect and discuss based on the short segments. The students were drawn to the tool and used it extensively. The news segments sparked the students' interest, leading them to explore additional materials. Compared to the control group, the students who received the intervention became more active in the educational discussion forums, allowing them even greater opportunities to reflect on the content of the education [19].

In the study that tested an approach of critical reflection, discussion, and peer response based on short segments of teaching for participation in a digital online platform [21], it was found that the approach increased students' opportunities for reflection and self-critique. At the same time, the authors emphasized the importance of providing participating students with guidance and support, as critical self-reflection can also lead to vulnerability. Additional aspects that were highlighted included the limitations of online self-reflection, as face-to-face interaction is different or even absent. However, the fact that students work online on a shared platform at their own pace could provide extended opportunities for some students who may feel more accessible or more comfortable with the digital format [21]. In Study H [23], digital theology was explored as a tool for self-reflection with the intention of preparing special educational needs teachers' proficiency skills in encounters with diverse learners. "Best-practice" video cases served as a pedagogical aid not only to inform students about teaching techniques and classroom management but also to serve as a foundation for teachers' self-reflection. Prospective teacher educators utilized these video cases both collaboratively in whole-class settings and individually, engaging in guided written reflections. The authors underscored the significance of the instructor's role, emphasizing that a video case, on its own, is simply a technological resource and requires guidance from a teacher-educator.

3.4. Research Gaps: Integrating Reflective Practice for Prospective Special Education Teachers

Effectiveness of written reflection exercises: Despite certain written reflection exercises, as exemplified in study [16], demonstrating increased confidence among prospective special education teachers, other findings, such as those in study [20], suggest that written reflection alone may not lead to significant differences in critical reflection. Further research could explore why some written reflection strategies are more successful than others and identify additional factors that may enhance their effectiveness.

Portfolios as tools for authentic learning and reflection: Studies on the use of portfolios as evidence of authentic learning and reflection, as illustrated in a previous study [21], suggest that this approach could contribute to increased professionalism and personal maturity. Research gaps may exist regarding how portfolios can be best structured and utilized to promote specific aspects of reflection and learning among prospective special education teachers.

Impact of digital tools on self-reflection: The results of this present analysis indicate that the use of digital tools, such as humorous news anchors or digital platforms, can influence students' opportunities for reflection. However, there are certain aspects to consider given that, without careful adaptation, technology can cause harm as well as produce benefits. Consequently, as mentioned in one of the studies [23], the instructor has a significant role in addressing this concern. Further research may be needed to explore how digital technology can be integrated into teacher education programs to promote efficient self-reflection among prospective special education teachers.

4. Discussion

4.1. Methodological Considerations

In conducting this study, the scoping review methodology [10,11] was employed to survey the existing literature in the field comprehensively. Given the narrow scope of

the database search field, the search yielded very few results. As a result, the initially confined search was eventually adapted and expanded to encompass a broader scope, including articles from Google Scholar and Summon (Summon is an academic search platform that aggregates and presents information from various sources, including library catalogs, databases, e-books, journals, and websites to search for and access scholarly information). This expansion led to slightly less uniform search strings, a permissible aspect within the scoping review procedure, where researchers are granted a certain degree of flexibility while ensuring transparency remains a crucial condition for the study's reliability. Additionally, a narrative thematic analysis approach was used to delve deeper into the themes identified and charted through Arksey and O'Malley's [11] five-stage iterative process. In alignment with stage 5 of this process, findings were gathered, summarized, and presented. This allowed for a systematic examination of qualitative data across the selected studies, enabling the identification of overarching themes and the exploration of nuances within them. The utilization of narrative analysis has been instrumental in deepening an understanding of the implications of self-reflection in the field of teacher education. Essentially, it proves a key to conducting "experiential" research, aimed at unveiling participants' thoughts, emotions, and actions. It is crucial to recognize that while the scoping review provided an overarching view of the existing research, the subsequent narrative analysis enabled the interpretation of the findings by elucidating variations within the themes identified through Arksey and O'Malley's [11] five-stage iterative process. This merged methodological approach [10,11] contributed to a more comprehensive exploration of the role of self-reflection in special education teacher training.

During the initial screening step, the identified articles were processed database by database, which differs from the typical PRISMA [14] practice. To prevent any misunderstanding about the scope of the number of articles, this deviation from the standard is explicitly mentioned in the PRISMA chart (Figure 1). Based on the interpretation of Arksey and O'Malley's [11] methodology, another deviation was that descriptive articles were also included, enabling a comprehensive overview of the research landscape. However, it hindered the process of a more precise quality assessment of the included interventions and should therefore also be highlighted.

4.2. Implications for Autism Education and Inclusive Educational Practices

Various approaches, including written reflection, digital platforms, and collaborative activities, were found to contribute to fostering self-reflective abilities. The synthesis revealed that reflective practice can promote professionalism among special education teacher students by enhancing their self-efficacy and confidence [16], preparing them to work effectively with vulnerable student populations [17], and improving their teaching outcomes through higher levels of reflective thinking [18]. It also provides proficiency skills for teachers to adapt their teaching strategies to meet diverse needs [23]. However, it is crucial to note that the specific methods employed to promote reflective practice may vary, highlighting the absence of a universal solution.

To enhance preservice teachers' capabilities to effectively navigate the professional uncertainties that may arise in educational interactions with students with autism who possess both challenges [1] and talents [3] to consider, specific elements within teacher education programs must be addressed. This scoping review underscores the importance of not just incorporating reflective exercises within the curriculum but also emphasizes the need for university educators to deliberate on how to structure education. One aspect is the impact of prior experience and environment on the pre-service teachers' capabilities for reflective practices [18]. Another strategy to facilitate prospective teachers' self-reflection, as outlined by Chapman [19], is to encourage them to differentiate between merely describing events and engaging in critical reflection on them. This approach emphasizes the importance of self-critique and introspection as part of the reflective process. This is particularly crucial in the context of teaching students with autism, who may, as per the WHO criteria [1], have difficulties in communication, interaction, and attention, but also

the capability to hold on to subjects of interest [3], which the prospective teacher needs to identify and tailor the instruction around. By harnessing the power of reflective practice, teacher students can enhance their awareness of the specific needs and challenges that students with autism may face. This heightened awareness can empower them to design and adapt their teaching strategies more effectively, ultimately contributing to the creation of a more inclusive learning environment for students with autism.

4.3. Personal Reflection: Benefits in Teacher Education

To describe what I take away from the outcomes of the present research review, I refer back to Kirchner et al. [3]. The authors' [3] report about the strengths within the autism spectrum revealed a connection between the pupils interpersonal and emotional strengths and confidence and health within the ASD group. The eight articles included in the overview yielded consistent results regarding the fact that self-reflection in action can generate an awareness of one's emotional register of uncertainty, fear, or embarrassment. Circumstances that, if not brought to the surface, risk causing inattention or an inability to adjust teaching strategies for the student. At the same time, the results of the studies indicated that tasking aspiring special educators with reflecting on their practice alone is insufficient for cultivated action to emerge [16–23].

Taking the conclusions from the results of studies A to H, I see that we as course instructors need to be more proactive. We need to guide students and provide them with tools. We cannot allow 'self-reflection' become something the students are expected to handle independently. Self-reflection can be understood through the lens of Mintz's [4] concept of professional uncertainty, providing educators with time and space for self-reflection combined with knowledge of evidence-based strategies, a prerequisite for avoiding stereotyping individuals with ASD. To enable prospective special educators to succeed in their self-reflection, guidance is necessary [16,22], which can also be understood as active participation from university instructors [17–19,21]. Alternative strategies could involve developing or customizing the digital tools in use [19,21,23]. What makes me most hopeful in the present study is the promising outcomes of collaboration between universities, future educators, researchers, and, ultimately, students in the field. Through collaboration between teachers and researchers, both student development and educational practices can evolve and be evaluated in a dynamic and responsive manner, ultimately contributing to ongoing and continuous improvement.

4.4. Limitations

The study employed a search strategy centered around three clusters of keywords: "pre-service teacher", "special education", and "reflective practice". While this approach was chosen to create a foundation for the scoping review, it also introduces a potential limitation. The specificity of these search terms, including variations such as "Student teachers", "teacher education", and terms such as "disabilities" or "special needs", might unintentionally exclude relevant literature that adopts alternative terminologies, potentially limiting the review's comprehensiveness. The primary focus of the study was on investigating strategies to enhance the self-reflection skills of future special education teachers, particularly within the context of inclusive teaching practices and interactions with students with autism. This focus, while providing valuable insights, implies a potential limitation in the generalizability of findings to broader educational contexts. Another limitation was that the search strategy did not add autism as a specific search field. This strategic choice was grounded in a particular perspective on autism as a heterogeneous collection of symptoms. The decision reflected a belief that self-reflection, as a core skill, inherently opens avenues for the development of versatile strategies applicable across a spectrum of situations, despite not explicitly focusing on autism-related terminology. Moreover, the study highlights the exclusive emphasis on self-reflection, potentially neglecting alternative pedagogical approaches. This implies that the study might not fully capture the spectrum

of strategies contributing to the development of effective teaching methods, particularly in the context of students with autism.

5. Conclusions

While most articles in this scoping review, in alignment with Klefbeck and Holmqvist [2], emphasize the importance of self-reflection as a valuable tool for aspiring teachers in fostering critical thinking and professionalism, it is crucial to address certain key considerations. The diverse methods employed to foster self-reflection across the studies highlight the absence of a universal solution. These varied approaches can be tailored to accommodate distinct student cohorts and learning contexts. While this scoping synthesis primarily focuses on special educational needs, specifically pertaining to pupils with autism, the methods utilized could conceivably be extrapolated to a broader spectrum, such as the Integration of Ethnic and Cultural Perspectives. In instances where cultural or ethnic diversity was incorporated into the studies, it's worth emphasizing that self-reflection is equally valuable as a tool to navigate the intricate landscape of multicultural instructional settings.

Finally, several of the included studies suggested that to transform self-reflection into a tool that empowers prospective teachers to confidently pause and act based on both knowledge and intuition in encounters with students in a special education context, including autism education, it is not enough to incorporate self-reflection activities in the teacher education program; the teacher candidates also need feedback and guidance. Teacher educators therefore have a key role in ensuring that emerging teachers are actively guided in their use of self-reflective approaches to their own learning and the work they do with students with autism and other educational needs.

Conflicts of Interest: The author declares no conflict of interest.

References

1. WHO. ICD-11 Clinical Descriptions and Diagnostic Requirements for Mental and Behavioural Disorders. World Health Organisation. 2023. Available online: https://icd.who.int/browse11/l-m/en (accessed on 12 November 2023).
2. Klefbeck, K.; Holmqvist, M. Using Video Feedback in Collaborative Lesson Research with SEND Teachers of Students with Autism-a Case Report. *Int. J. Disabil. Dev. Educ.* **2023**, 1–17. [CrossRef]
3. Kirchner, J.; Ruch, W.; Dziobek, I. Brief Report: Character Strengths in Adults with Autism Spectrum Disorder without Intellectual Impairment. *J. Autism Dev. Disord.* **2016**, *46*, 3330–3337. [CrossRef] [PubMed]
4. Mintz, J. *Professional Uncertainty, Knowledge and Relationship in the Classroom: A Psychosocial Perspective*; Routledge: London, UK, 2014.
5. Wolrath Söderberg, M. Critical self-reflection on complex issues: Helping students take control of their thinking. *Högre Utbild.* **2017**, *7*, 77–90. [CrossRef]
6. Holmqvist, M. Children with Autism Spectrum Conditions: Social Norms and Expectations in Swedish Preschools. In *Special Education in the Early Years: Perspectives on Policy and Practice in the Nordic Countries*; Springer International Publishing: Cham, Switzerland, 2022; pp. 31–42.
7. Schön, D.A. *The Reflective Practitioner: How Professionals Think in Action*; Taylor & Francis Group: Oxford, NY, USA, 1994.
8. Dewey, J.; Boydston, J.A. The Sources of a Science of Education. In *The Later Works of John Dewey, Volume 5, 1925–1953: 1929–1930, Essays, the Sources of a Science of Education, Individualism, Old and New, and Construction and Criticism*; SIU Press: Carbondale, IL, USA, 1988.
9. de Beauchamp, C. Reflection in teacher education: Issues emerging from a review of current literature. *Reflective Pract.* **2015**, *16*, 123–141. [CrossRef]
10. Munn, Z.; Peters, M.D.; Stern, C.; Tufanaru, C.; McArthur, A.; Aromataris, E. Systematic review or scoping review? Guidance for authors when choosing between a systematic or scoping review approach. *BMC Med. Res. Methodol.* **2018**, *18*, 143. [CrossRef] [PubMed]
11. Arksey, H.; O'Malley, L. Scoping studies: Towards a methodological framework. *Int. J. Soc. Res. Methodol.* **2005**, *8*, 19–32. [CrossRef]

12. National Institute for Health and Care Research. PROSPERO, International Prospective Register of Systematic Reviews. 2023. Available online: https://www.crd.york.ac.uk/prospero/ (accessed on 27 August 2023).

13. Karolinska Institutet Söka & Värdera. Systematiska Översikter. Search & Evaluate. Systematic Reviews. 2023. Available online: https://kib.ki.se/soka-vardera/systematiska-oversikter (accessed on 27 August 2023).

14. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; Boutron, I.; Hoffmann, T.C.; Mulrow, C.D.; Moher, D. The PRISMA 2020 statement: An updated guideline for reporting systematic reviews. *BMJ* **2021**, *88*, 105906. [CrossRef]

15. Howell, D.C. *Statistical Methods for Psychology*; Cengage Learning: Boston, MA, USA, 2012.

16. DeBettencourt, L.U.; Nagro, S.A. Tracking special education teacher candidates' reflective practices over time. *Remedial Spec. Educ.* **2019**, *40*, 277–288. [CrossRef]

17. Caruana, V. Using the Ignatian pedagogical paradigm to frame the reflective practice of special education teacher candidates. *Jesuit. High. Educ.* **2014**, *3*, 19–28. Available online: https://epublications.regis.edu/jhe/vol3/iss1/8 (accessed on 27 August 2023).

18. Catapano, S.; Slapac, A. Preservice teachers' understanding of culture and diversity: Comparing two models of teacher education. *Teach. Educ. Pract.* **2010**, *23*, 426–443.

19. Chapman, D.N. Using PulpMotion Videos as Instructional Anchors for Pre-Service Teachers Learning about Early Childhood Special Education. *Int. Res. Early Child. Educ.* **2014**, *5*, 56–63.

20. Cohen-Sayag, E.; Fischl, D. Reflective writing in pre-service teachers' teaching: What does it promote? *Aust. J. Teach. Educ.* **2012**, *37*, 20–36. [CrossRef]

21. Golloher, A.; Middaugh, E. Diversity Dialogues: Online discussions impact on teacher candidates' adoption of characteristics of inclusive teachers. *Asia-Pac. J. Teach. Educ.* **2021**, *49*, 403–419. [CrossRef]

22. Jones, E. Enhancing professionalism through a professional practice portfolio. *Reflective Pract.* **2010**, *11*, 593–605. [CrossRef]

23. Kurz, T.L.; Batarelo, I. Constructive features of video cases to be used in teacher education. *TechTrends* **2010**, *54*, 46–53. [CrossRef]