education sciences

MDPI

Systematic Review

How Co-Teaching May Contribute to Inclusion in Mathematics Education: A Systematic Literature Review

Malin Gardesten

Department of Mathematics, Linnaeus University, 352 52 Växjö, Sweden; malin.gardesten@lnu.se

Abstract: This systematic literature review focuses on co-teaching and inclusion in mathematics education. Co-teaching, in which two or more teachers share responsibility for students' mathematical learning, can cater to students in need of special education. Through a narrative synthesis of 15 articles found through searches in 5 databases, this study investigates what characterizes co-teaching and how it contributes to students' inclusion in mathematics education. The review was conducted by identifying the focus, specifying review questions, determining studies to include, deciding on data to extract, and reporting the results. The findings show that co-teaching can contribute to spatial inclusion in mathematics education, implying that all students can be taught in the same classroom. Furthermore, co-teaching that contributes to social and didactical inclusion addresses all students' mathematical learning if it is flexibly organized. Therefore, students struggling to gain access to mathematics and those requiring extra challenges in mathematics learning can benefit from this teaching model.

Keywords: co-teaching; inclusive education; mathematics teaching; narrative synthesis; systematic literature review

Citation: Gardesten, M. How Co-Teaching May Contribute to Inclusion in Mathematics Education: A Systematic Literature Review. *Educ. Sci.* **2023**, *13*, 677. https://doi.org/10.3390/educsci13070677

Academic Editor: Lisa Bendixen

Received: 16 April 2023
Revised: 17 May 2023
Accepted: 30 June 2023
Published: 2 July 2023

1. Introduction

This systematic literature review focuses on co-teaching (cooperative teaching) and inclusive education in mathematics at the primary and secondary school levels. In this review, co-teaching refers to the practice of two or more teachers being responsible for teaching a class of students. However, it does not include teaching assistants owing to the assumption that teachers are responsible for students' learning. Furthermore, this review refers to inclusion in mathematics education, that is, all students in a class, regardless of their educational needs, participating in mathematics education and learning mathematics together with teachers and peers. Educational needs are understood as struggling to gain access to learning mathematics as well as needing extra challenges in mathematics for a short or long period—thus a diversity of educational needs.

According to Friend et al. [1], co-teaching has its roots in the 1950s, when general education teachers shared responsibilities for large student groups. As noted by Cook and Friend [2], since the 1980s, co-teaching has also been legitimized as an educational setting for special education teachers to meet students' different educational needs in general education settings. This is also visible in several countries where national regulations and laws have stipulated the right to a general education curriculum for students in need of special education, propelling co-teaching models [3,4]. As noted, the expression *students in need of special education* is used in this review. This expression is from Bagger and Roos [5], emphasizing that the difficulties faced by these students in school are best understood in relation to the contexts in which their education is situated.

Studies indicate that heterogeneous grouping can be a promising strategy for improving mathematics achievement and promoting equity in the classroom [6,7]. A supportive learning environment in heterogeneous classrooms that maximizes mathematics learning opportunities for all students can, however, manifest differently. One successful model includes working with open-ended problems containing critical mathematical

ideas that allow for different representations and several possible solutions, giving students across the achievement spectrum the opportunity to achieve their potential [8]. Boaler [8,9] highlights that working methods like these can lead to an appreciation of different students' contributions.

Studies focusing on successful teaching approaches and strategies for inclusive mathematics education in heterogeneous classrooms foreground several different approaches and strategies. One is that all students' contributions should be valued in the classroom. In a literature review, Civil et al. [10] elaborate on perspectives of equitable mathematics teaching, of which inclusive mathematics teaching is one. Based on their review, the authors address the importance of teachers' shifting perspective to the students as the ones who know and produce mathematical knowledge instead of the teacher [10]. Hunter et al. [11] conducted a professional development intervention focused on inclusive mathematics teaching, investigating teachers shifting beliefs about ability grouping in mathematics classrooms. One result showed that when students are expected to share their thoughts and respond to others' thinking, they can develop a more robust mathematical disposition and an enhanced sense of agency [11]. Also, Civil et al. [10] highlight the importance of the students owning their mathematical ideas. Similarly, Prediger and Buró [12], reporting on the rich repertoires used in inclusive mathematics teaching, stress the importance of engaging the entire class in discussing and comparing strategies using tools such as graphical representations to compensate for limited pre-knowledge.

Another focus in studies on successful teaching approaches and strategies for inclusive mathematics education is on the tasks and the education designed in the classroom. In many classrooms, students in need of special education often repeat monotonous tasks in which quantity rather than quality is prioritized. To overcome this issue, the teachers in a study by Lindenskov and Lindhart [13] developed high-level mathematics tasks that allowed for different solutions, thus making tasks that were accessible for all students, including "students vulnerable in mathematics" (p. 58). Faragher and Clarke [14] have found that adjusting activities and materials for students with Down syndrome also supported the entire class. The adjusted activities did not simplify mathematics but rather lowered the barriers to learning, providing all students with considerable opportunities to learn mathematics. Lindenskov and Lindhardt [13] also present other possibilities for promoting inclusive mathematics education, such as fostering students' focus on learning by complementing the initial discourse at the beginning of a lesson with gestures and drawings, offering efficacious, rather than repetitive, tasks that students can engage in directly, and using formative assessment. Compatible with these results is the framework of Universal Design for Learning, an approach that challenges the idea of organizing support for students in special education with differentiated groups. In the context of mathematics education, this approach focuses on removing barriers to students learning of mathematics by providing multiple means of representation, engagement, and expression. By implementing universally designed practices, teachers can foster equitable access and learning opportunities for all students, regardless of their individual abilities. These designed practices may involve using varied instructional materials, incorporating assistive technology, offering alternative methods of assessment, and promoting collaborative and differentiated instruction [15].

However, although heterogeneous mathematics classrooms as described above benefit the learning of all students, Boaler [8] addresses the fact that teachers face various challenges in organizing mathematics teaching that can meet different achievement levels and enable the positive effects simultaneously across same-aged peers. The current review addresses this challenge through a systematic literature review examining whether co-teaching can contribute to inclusive mathematics teaching where all students have opportunities to learn mathematics. This is investigated in line with Ainscow and Sandill [16], who address the organizational factors that may affect schools' efforts to stimulate inclusive processes, such as combining different teachers' proficiencies in collaborative processes in which their practices are responsive to students' educational needs. However, as co-teaching and

inclusive mathematics teaching may be defined differently, the two concepts are further elaborated upon below.

There are several variations of co-teaching models and settings, which also emerge as integrated co-teaching models with students' educational needs as a common starting point [1,17]. Since different co-teaching models do not have the same possibility of demonstrating equality in status and power of teachers, which in turn affects the inclusion of students [18], this review considers the types of models and settings used. First, the predominant co-teaching model, *one teach, one assist*, comprises one teacher leading the instruction and another catering to students' individual learning needs. In this model, a general education teacher—often seen as the content specialist—collaborates with a special education teacher as a learning specialist; however, this does not include teacher assistants [19]. The general education teacher often plays a prominent role by having content knowledge and overall responsibility for the students. Contrastingly, the special education teacher often focuses on students in need of special education, representing a minority in the classroom [20]. The second model, *station teaching*, that is, non-sequential instruction, divides students into three or more groups called stations. Each teacher sets up a station in the classroom and is responsible for one part of a divided lesson. Students then move from one station to another after completing one part of the lesson with one teacher. Third, *parallel teaching* is characterized by two teachers presenting the same content to students divided into two groups. The division aims to differentiate the content and increase students' learning. Fourth, *team teaching* includes two teachers lecturing a class by taking turns to lead a discussion at different times or together during the same lesson. For example, the teachers may present diverse views on a concept or solve a problem differently [21]. Students taught mainly with the one-teach, one-assist model often refer to the general education teacher as their real or regular teacher and the special education teacher as the assistant. Conversely, students taught through the station, parallel, or team-teaching models often consider both the general and special education teachers to be performing the same role [18].

An internationally accepted definition of inclusion is a process to overcome barriers that can hinder students from being provided with equitable teaching and participation in learning experiences [22]. However, in the literature, the term inclusion has various implications. A literature review on inclusion in mathematics education shows that the notion of inclusion in research is either defined as an ideology related to values or as a way of teaching related to equity and engagement in mathematics [23]. A common implication of the term in the educational context is the introduction of special education-focused teaching in classrooms. Nonetheless, education is conducted as before without any changes except for the location of the students in need of special education, disregarding diverse educational needs [24,25]. The current review considers different aspects of the notion of inclusion to understand the term inclusive mathematics teaching as connected to whether students have good opportunities to learn mathematics.

In a review of research on professional development for inclusive education, three main definitions of inclusion were identified. One group of studies, the majority, defined inclusion solely in terms of ability differences, focusing on students with disabilities, those at risk, or those with learning difficulties. These studies aimed to provide access to the general education curriculum through instructional methods or by changing school cultures to facilitate access, participation, and learning. A second group of researchers defined inclusive education by considering racial, class, gender, or cultural differences. These studies addressed educational equality and cultural empowerment by challenging power structures and promoting inclusive practices in science education and other domains. The third group of researchers defined inclusive education as participation and learning for all students, understanding inclusive education in broader terms and emphasizing the systemic process of overcoming barriers to participation and learning for all students. Overall, the findings of the review suggest broadening the boundaries of inclusive education to

include other forms of differences beyond ability, creating inclusive environments where all students can participate, learn, and thrive [26].

Roos [27] investigated how students, both those struggling to gain access to mathematics and those needing additional learning challenges, describe inclusive mathematics teaching regarding the provision of opportunities to learn mathematics. The results show that for some students, providing learning opportunities in places other than the classroom is important; therefore, from a student's perspective, inclusive mathematics education may include occasionally being taught outside the classroom. In the same direction, Kauffman [28] argues that the central focus of special education should be on providing effective instruction to students with disabilities rather than on inclusion in regular education classrooms. The author suggests that the current emphasis on inclusion has resulted in a too-general approach to education that does not meet the diverse needs of students with disabilities. Instead, the author suggests that special education should focus on individualized instruction that is tailored to the unique needs of each student, providing appropriate accommodations and modifications to support student learning and academic success.

From a more analytical perspective, inclusion can be viewed through a three-dimensional lens: *spatial inclusion*, *social inclusion*, and *didactical inclusion* [29]. Spatial inclusion is when all students are placed in the same physical space [29]; this is similar to integration [22]. Social inclusion is when all students interact with their peers and teachers in social contexts, regardless of their learning needs. Didactical inclusion is directly connected to students' learning and implies that teaching that is adapted to the diverse needs of each student will facilitate learning [29]. Thus, spatial inclusion does not have to exclude didactical inclusion [29], as this dimension takes diversity as a point of departure, adapting mathematics teaching towards access to mathematics learning for all students. In other words, inclusion does not only refer to physical and social participation in the classroom but also didactical participation, describing a situation in which all students participate in mathematics education, learning mathematics together with their teacher and peers.

Based on the research on inclusion presented above, the specific focus of this systematic literature review is on inclusion in relation to co-teaching in mathematics at the primary and secondary school levels, addressing the research question: What characterizes co-teaching that contributes to students' inclusion in mathematics education?

2. Conceptual Framework

A framework is needed to analyze the inclusive potential in the reviewed studies when investigating the characteristics of co-teaching that contribute to didactically inclusive mathematics education. As the meaning of inclusive mathematics education may differ across studies, a conceptual framework embracing this diversity is needed. Thus, a framework that considers aspects of *who* is included, *what* inclusion implies, as well as *where* inclusion takes place was selected. Accordingly, the three definitions of inclusive education by Waitoller and Artiles [26] previously described are used as a conceptual framework (Table 1).

The first definition, *inclusive education related to ability differences*, addresses students with diverse disabilities (who) and instructional accommodations and strategies (what) aiming at providing access to general education classrooms and curricula for these students (where). The second definition, *inclusive education related to racial, class, gender, or cultural differences* (who), but not ability differences, addresses issues of power structures (what), focusing on agency in the classroom (where). The third definition, *inclusive education as a process of overcoming barriers for all students*, addresses participation, learning, and providing academic achievement (what) for all students (who) based on a broader view of inclusive education (wider than where, as a place), referring to inclusive education as a process aiming at understanding barriers to participation in education and how to overcome the barriers. In the results, the studies in these three categories will also be discussed in relation to spatial, social, and didactical inclusion [29].

Table 1. Definitions of inclusive education [26].

	Definitions	Who	What	Where
1	Inclusive education is related to ability differences.	Students with diverse disabilities.	Instructional accommodations and strategies.	Access to general education classrooms and curricula.
2	Inclusive education related to race, gender, class, and culture.	Racial, class, gender, or cultural differences.	Issues of power structures.	Agency in the classroom.
3	Inclusive education as a process of overcoming barriers for all students to learning and participation.	All students.	Providing academic achievement.	A process aimed at understanding barriers to participation and what to do to overcome the barriers.

3. Methods

The reporting of this systematic review was guided by the standards of the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) Statement (http://prisma-statement.org/PRISMAStatement/, accessed on 17 April 2023).

This systematic literature review was conducted following Popay et al.'s [30] guidance in identifying the focus of the review, specifying review questions, identifying the studies to include, deciding which data to extract, and reporting the results. Specifically, the present review focuses on characterizing co-teaching phenomena connected to inclusion rather than compiling previous research results. A comprehensive database search was conducted to identify peer-reviewed academic articles using ERIC, the Mathematics Education Database, Web of Science, PsycInfo, and the Teacher Reference Center to identify which studies to include. The first searches were conducted on 4 April 2019, and a similar additional search was conducted on 21 September 2021. Figure 1 shows a flow diagram of the number of included articles.

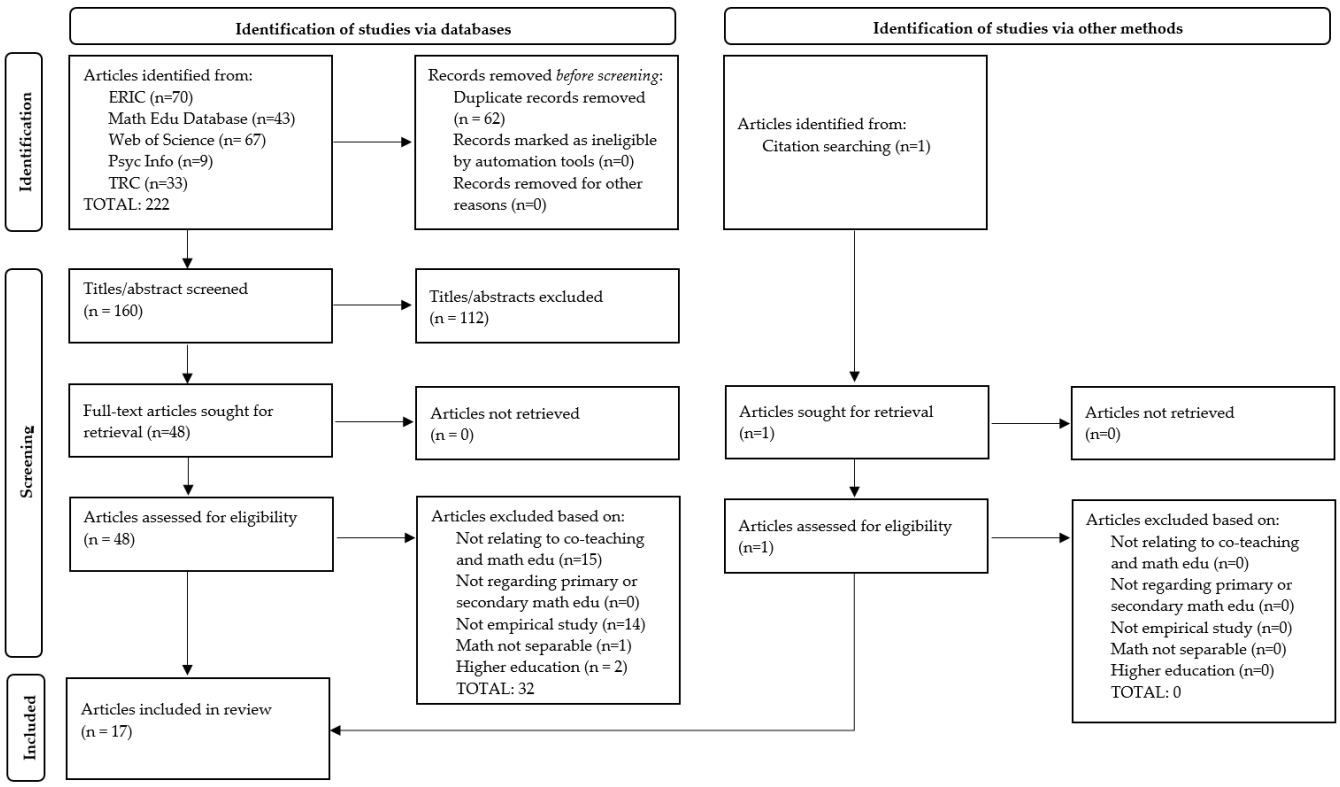

Figure 1. PRISMA 2020 flow diagram.

3.1. Identification

The first searches controlled for records in abstracts or titles, using the search string: "cooperative teach*" OR "co-teach*" OR "team teach*" OR "collaborative teach*". The search strings used indexing words, free text words, or both. Initially, the search was limited to studies published since the year 2000. However, this limit was removed because only a limited number of relevant studies were published before 2000. These searches resulted in 9071 records. After filtering for peer-reviewed articles written in English, 4590 records remained. The following two searches contained the search string: ("cooperative teach*" OR "co* teach*" OR "team teach*" OR "collaborative teach*") AND "math*" and returned 444 records from the 5 databases mentioned above. After a similar filter was applied (peer-reviewed articles written in English), 220 records remained. In the early searches AND "inclus*" was added as an extra search layer. However, this layer resulted in records not connected to *inclusive education*, where the meaning of "inclus*" turned out to be connected to, for example, *inclusion criteria* or the *inclusion of participants* in the articles. In addition, when the inclusion search layer was used, records were left out compared to searches not using this search layer. Among these left-out articles were relevant studies that were indirectly connected to inclusive teaching approaches. For all of these reasons, the 'inclus*' search layer was removed. Consequently, the searches were conducted for studies on *co-teaching* in *mathematics*, as described above. The characteristics of how co-teaching in mathematics contributed (or not) to inclusive mathematics education were then used to answer an empirical question investigated through the lens of the framework by Waitoller and Artiles [26] (2013) presented above.

The searches were prepared in consultation with a subject university librarian. Furthermore, the additional search in September 2021 was conducted with the same procedures. One difference in this search was that the Mathematics Education Database had been terminated and thus was not used. Two more articles were identified, resulting in 222 total articles.

3.2. Screening

After controlling for duplicates, 62 articles were excluded, and a sample of 160 articles remained. The author read these articles' abstracts to determine which articles should be included for full-text reading. Additionally, of these 160 articles, a mathematics education professor and a senior lecturer in special education read 16 abstracts each, distributed by chance. Individually, the articles were sorted as follows. Articles fulfilling the following three inclusion criteria were selected for full-text reading:

1. Studies related to "cooperative teaching" and "mathematics education";
2. Studies regarding primary or secondary mathematics education;
3. Empirical studies;

Exclusion criteria:

1. Studies where mathematics was combined with other subjects, and could not be identified or separated;
2. Studies that included higher education, teacher (further) education, or student teachers.

Articles matching at least one of the exclusion criteria were excluded. A check for interrater reliability of the abstracts resulted in an agreement of 90.61% and a Cohen's kappa of 0.37, thus revealing fair agreement among the researchers. Abstracts flagged for inclusion by one reader and exclusion by another were included for full-text reading.

Forty-eight articles fulfilled the aforementioned criteria. Scanning the titles in the list of references for these 48 articles led to an additional article being included for full-text reading based on its title and abstract.

3.3. Eligibility

Full-text readings of the 49 articles led to 32 exclusions, considering the inclusion and exclusion criteria.

The remaining 17 articles, which included both quantitative and qualitative designs, were subject to a quality appraisal, in line with Dixon-Woods et al. [31], who suggest that articles included in reviews should have the following quality requirements: (i) clearly stated aims and objectives; (ii) specified and appropriate research designs for the aims and objectives; (iii) a clear account of the process by which findings were reproduced; (iv) enough data to support interpretations and conclusions; and (v) an appropriate and adequately explicated method of analysis. The remaining 17 articles were assessed to meet these quality requirements, resulting in 17 articles being selected for the analysis.

3.4. Analysis

The systematic literature review was conducted as a narrative synthesis—an approach that synthesizes texts from several studies, summarizes them, and explains the findings; this helps focus on articles that address diversified questions and research designs [30]. Gough et al. [32] label such synthesis "thematic summaries". Data in a narrative synthesis can be found interspersed throughout the text [30].

Some studies dealt with other subjects in addition to mathematics; therefore, the specific parts focusing on other subjects were excluded from this review's analysis. First, a deductive analysis was conducted, and the articles were categorized based on the three definitions of inclusion (Table 1; [26]). Based on the first definition, articles specified that a certain group of students, based on their abilities, formed one category. The specified group of students could, for example, be labeled as advanced learners, students having difficulties, students with learning disabilities, or students at risk of school failure. In addition, articles that defined co-teaching as an educational setting to include students with learning disabilities in general education were categorized similarly. However, in the analysis, as will be further described, it was shown that no article was sorted based on the second definition, as no article focused on racial, class, gender, or cultural differences. Based on the third definition, articles foregrounding mathematics education for all students or studies that did not specify that a certain group of students, based on their abilities, racial, class, gender, or cultural differences, formed a category. These articles could describe the students, such as students in grades 7–12, 8th graders, and students with and without disabilities in math. For all categories, data were sought in the articles' introduction, methods, and/or results sections since co-teaching could constitute the context of a study or be used as an intervention in a study. Table 2 specifies the role of co-teaching in each article.

Table 2. Included articles.

Author (Year) (Full Author Attribution Is Given in the Reference List.)	Journal	Title	Scope of the Study and the Roles of Co-Teaching	Sample	Study Design	Methods
Ansari and Wahyu (2017)	First Ahmad Dahlan International Conference on Mathematics and Mathematics Education	Mathematics understanding and anxiety in collaborative teaching	Examines grade 7 students' mathematical understanding and anxiety while using co-teaching. Co-teaching as an intervention.	26 students in the experiment group, 25 students in the control group, grade 7	Quantitative	Pre-post-test on students' ability to solve word problems, questionnaire on students' mathematics anxiety level. Mann–Whitney test (1-tailed).
Akyuz and Stephan (2022)	International Journal of Mathematical Education in Science and Technology	Co-teaching practices that build autonomy for students with learning disabilities in mathematics	Explores the co-teaching practices in an inquiry mathematics classroom setting regarding effective planning and teaching practices to support SEM students with developing intellectual autonomy. Co-teaching as part of the context.	1 math teacher, 1 spec edu teacher, 5 students, grade 7	Qualitative	Observations, interviews, meetings, and documents. The constant comparative method.

Table 2. *Cont.*

Author (Year) (Full Author Attribution Is Given in the Reference List.)	Journal	Title	Scope of the Study and the Roles of Co-Teaching	Sample	Study Design	Methods
Bottge et al. (2015)	Exceptional Children	Impact of enhanced anchored instruction in inclusive math classrooms	Tests the effects of enhanced anchored instruction (EAI) on students with and without MD in co-taught general education classrooms. Co-teaching as part of the context.	248 students BAU, 223 students EAI, grades 6–8	Quantitative	Fractions Computation Test, Problem Solving Test, a norm-referenced standardized achievement test. Two-level multilevel model (student, teacher).
Brendle et al. (2017)	International Journal of Special Education	A study of co-teaching and identifying effective implementation strategies	Examines grade 4-teachers in math co-taught classrooms to document the method of implementation and gain insight into participants' knowledge and perceptions of co-teaching. Co-teaching as part of the context.	1 elementary general education math teacher, 1 elementary special education teacher, grade 4	Qualitative	A semi-structured interview, questions with a rating scale, open-ended questions post-interview, and classroom observations. Thematic analysis.
Carty and Farrell (2018)	Support for Learning	Co-teaching in a mainstream post-primary mathematics classroom: an evaluation of models of co-teaching from the perspective of the teachers	Examines the use of co-teaching models when teaching mathematics and their importance as a pedagogical approach for 12–14-year-old SEM students in inclusive classrooms. Co-teaching as an intervention.	4 teachers post-primary school	Qualitative	Peer observations, reflective journals, and semi-structured interviews. Content analysis.
Fresko et al. (1994)	Journal of Education for Teaching	Consultant as co-teacher: An intervention for improving mathematics instruction	Examines how an intervention strategy was implemented to indicate both organizational and psychological barriers to smooth operation. Co-teaching as an intervention.	7 teachers grades 10–12	Qualitative	Open-ended questionnaires to students, teachers, and consultants, Interviews with teachers, consultants, and school principals. Content analysis.
Jang (2006)	Educational Research	Research on the effects of team teaching on two secondary school teachers	Investigates the effects of co-teaching on 8th grade student performance and teacher perceptions concerning co-teaching. Co-teaching as an intervention.	2 math teachers, grade 8	Mixed methods	Students' scores on a test, questionnaires, teachers' self-reflection, video recordings of teaching performances, and interviews with teachers. t-tests. Coding and categorization of data.
Kane and Henning (2004)	Journal for the Education of the Gifted	A case study of the collaboration in mathematics between a fourth-grade teacher and a talented and gifted (TAG) coordinator	Investigates how a fourth grade teacher and a TAG coordinator collaborated to improve services for advanced learners. Co-teaching as part of the context.	1 math teacher, grade 4, 1 TAG coordinator	Qualitative	Questionnaires (demographic data), interviews, and observations. Thematic analysis.
King-Sears and Strogilos (2020)	International Journal of Inclusive Education	An exploratory study of self-efficacy, school belongingness, and co-teaching perspectives from middle school students and teachers in a mathematics co-taught classroom	Explores teachers' perspectives on co-teaching and 6th-grade students' experiences receiving co-teaching. Co-teaching as part of the context.	1 general educator, 1 special educator, and 10 students in grade 6	Quantitative	Self-rating questionnaires to students on school belonging and self-efficacy and to teachers on their instructional approach and self-efficacy. Descriptive analysis.

Table 2. *Cont.*

Author (Year) (Full Author Attribution Is Given in the Reference List.)	Journal	Title	Scope of the Study and the Roles of Co-Teaching	Sample	Study Design	Methods
Magiera et al. (2005)	Teaching Exceptional Children	Benefits of co-teaching in secondary mathematics classes	Investigates what co-teaching means for secondary special education. Co-teaching as part of the context.	20 teachers at the secondary school level	Qualitative	Observations, interviews.
Polly (2012)	Mathematics Teacher Education and Development	Supporting mathematics instruction with an expert coaching model	Examines the types of support that elementary school teachers seek from more knowledgeable others and the influence of various types of support on their teaching while attempting to implement standard-based pedagogies. Co-teaching as part of the context.	4 teachers	Qualitative	Field notes from classroom observations, conversations with the participants, researcher memos. Inductive analysis
Rimpola (2014)	Educational Planning	Collaborative planning and teacher efficacy of high school mathematics co-teachers	Investigates grades 9–11 grades student achievement in algebra and geometry using co-teaching. Co-teaching as part of the context.	77 math teachers, 15 spec edu teachers, grades 9–11	Quantitative	Teachers' Sense of Efficacy Scale Mathematics Teaching Efficacy Belief Instrument ANOVA. Semi-structured teachers interviews.
Saint-Laurent et al. (1998)	Exceptional Children	Academic achievement effects of an in-class service model on students with and without disabilities	Investigates the impact of co-teaching on the achievement of SEM students. Co-teaching as an intervention.	606 students in grade 3	Quantitative	Pre-post-test, MANCOVA.
Walmsley and Hickman (2007)	Focus on Learning Problems in Mathematics	Class within a class: A systematic approach to teaching high school mathematics students with special needs	Investigates the impact of co-teaching on the achievement of students at risk of school failure. Co-teaching as an intervention.	88 students	Mixed methods	Math test scores, t-test.
Walsh (2012)	Preventing School Failure: Alternative Education for Children and Youth	Co-teaching as a school system strategy for continuous improvement	Investigates the effects of co-teaching to close achievement gaps and make improvements for SEM students. Co-teaching as part of the context.	70 schools, grades 3–8	Quantitative	Math test scores.

Additionally, even if using a framework with a broad view on inclusion, two articles (i.e., [33,34]) did not directly or indirectly connect co-teaching to inclusive education. Consequently, they were not connected to any of the three definitions of inclusion in the framework and were thus excluded from further analyses. Thus, based on the 15 included articles (Table 2), two categories based on Waitoller and Artiles [26] were construed: (i) inclusive mathematics education concerning students with varying abilities; and (ii) inclusive mathematics education concerning all students. Then, an inductive analysis of the studies within each category was carried out based on characteristics focusing on *how inclusive mathematics education is characterized*, *co-teaching models and settings used*, and *co-teachers' professional constitution*.

4. Results

The results will be presented using the following structure: First, some general terminological questions that concern all included articles are described. Then, the articles will be separated into two overarching categories according to Waitoller and Artiles [26] framework: articles that deal with the inclusion of students of varying abilities and articles that deal with inclusion for all. Within each of these two categories, the themes that concern aspects of inclusion are described, followed by descriptions of the themes that concern aspects of co-teaching. Within each category, the reviewed articles appear across multiple themes. This section ends with a summary.

First, a short overview of the terms used in the articles is presented. All articles are about two or more teachers being responsible for every student's academic development in mathematics education; however, different terms are used for this collaboration: *co-teaching* [35–45], *cooperative teaching* [46], *collaborative teaching* [47,48], and *team teaching* [49]. In the results, *co-teaching* is used, encompassing all the aforementioned terms.

Furthermore, there are differences regarding how—or if—diversities among the students are termed. The studies that specify diversity use terms such as *learning disabilities*, *behavior disorders*, *communication disorders*, *hearing difficulties*, *intellectual disabilities* [46], *mild intellectual disabilities*, *other health impairments*, *specific learning disabilities*, *autism*, or *emotional and behavioral disorders* [36]. Some studies specify students' conditions as *special needs* or *learning disabilities* [35,37,44], *students with disabilities* [41,43,45], *students with special educational needs (SEN)* [38], or students having *difficulties understanding the materials presented or solving problems* [47]. In Kane and Henning [48], the participants were students who were *advanced learners*. The current review uses *students in need of special education in mathematics (SEM)* (cf. [5]) if the context does not require specification.

4.1. Co-Teaching When Inclusive Mathematics Education Is Concerned with Students with Varying Abilities

This category addresses inclusive education as a way for students with varying abilities to gain access to general education classrooms and instructional curricula using accommodations. Students of varying abilities are addressed, including students with difficulties and disabilities as well as students who are advanced learners. Six studies [37,41,45–48] specified in their research that the co-teaching of mathematics aims to include a particular group of students based on varying abilities and were thus sorted into this category.

4.1.1. Inclusion in the Sense of Being in the Same Classroom

These six studies show that mathematics teaching is conducted in *a classroom*. The physical place is addressed when including a particular group of students. Pull-in and pull-out models, meaning a student or a group of students are occasionally taught in another place than the ordinary classroom, are used as standard expressions to explain how the teaching for SEM students is often conducted [46,48]. The location, being in a classroom, is addressed in Ansari and Wahyu [47], where students' problem-solving abilities were compared between co-taught and non-co-taught classrooms. By analyzing students' mathematical anxiety levels, results show that, compared with non-co-taught students, the co-taught students acquired higher mathematical understanding with a lower level of mathematics anxiety. Ansari and Wahyu [47] address the fact that the students had more time and chances to consult a teacher since two teachers guided them, which led to less nervousness amongst the students. In Magiera et al. [41], a special education teacher sometimes supported the SEM students through small group instruction in the classroom. However, this was rare, as whole-class instructions were the most common setting in this study. Within the classroom, mathematics teaching used *differentiated instructions*—emphasized as essential for academically and behaviorally diverse students. The co-teachers in Walsh [45] were provided with a professional development program on ways to increase student engagement through differentiating assignments. Similarly, in Brendle et al. [37], special education teachers learned the content from joint lesson planning,

and the general education teacher learned how to differentiate instructional strategies connected to the content. According to the teachers, students benefited from the various instructional approaches.

4.1.2. Co-Teaching Models When Including Students with Varying Abilities

In four of the six studies, co-teaching implied the collaboration of a general education or mathematics teacher and a special education teacher to identify and cater to the needs of SEM students and develop educational strategies [37,41,45,46]. Brendle et al. [37] used parallel co-teaching primarily to provide the SEM students with instructions in general education settings. The term *team teaching* was used only in Magiera et al. [41] and was described as when the special education teacher assisted the general education teacher or monitored the tasks while the general education teacher was the primary instructor. The special education teacher enhanced SEM students' participation by assisting the general education teacher. Co-teaching enabled them to combine their expertise in the classroom to improve instruction for SEM students.

In the two remaining studies, the co-teaching models were not explicitly elaborated upon. In Kane and Henning [48], co-teaching comprised a fourth-grade teacher and a Talented and Gifted Coordinator—an expert with a master's degree in educating gifted students. The focus was on how gifted and talented/advanced learners can be challenged in inclusive mathematics education daily instead of through a pull-out solution once a week. The co-teaching design in Ansari and Wahyu [47] only stated that two teachers were involved in planning and teaching using the "one teach, one assist" model and evaluation. The assisting teacher monitored the students' learning, identifying SEM students.

4.2. Co-Teaching When Inclusive Mathematics Education Is Concerned with All Students

This category addressed inclusive education as a process of overcoming barriers to *all* students' participation, learning, and academic achievement based on a wider view of inclusive education. Nine studies [35,36,38–40,42–44,49] referred to co-teaching as being concerned with all students' learning in mathematics. All of these studies stated a concern for both *SEM students* and *students not in special educational needs* or *all students*.

4.2.1. Inclusion in the Sense of Providing All Students Opportunities to Learn Mathematics

One characteristic represented in this category is that mathematics teaching addresses *students' confidence and self-esteem* based on their different prerequisites. In Akyuz and Stephan [35], the mathematical tasks created helped the students engage from the start. The student felt competent, and their mathematical confidence rose. The co-teachers planned tasks rich in imagery that all students could engage in, and students would feel confident contributing to the lesson and discussing their mistakes. In King-Sears and Strogilos [40], the students stated that making mistakes was acceptable as long as they learned and improved. The co-teachers valued students' strategies, focusing on mathematically relevant parts, leading to students gaining confidence in the subject. Similarly, the co-teachers in Polly [42] asked follow-up questions about the students' processes to find the solution or their rationale for choosing the steps. The questions were cognitively demanding, as were the tasks, because they were non-routine and required students to devise a strategy and justify their approaches. In Walmsley and Hickman [44], the co-teachers provided immediate feedback by dividing the class into two groups. Students asked more questions and engaged in discussions. At the end of the lessons, the class discussed the content taught based on a template that all students used when documenting their work. The template may have been necessary for some students; however, all students could use it. Likewise, in Bottge et al. [36], SEM students were assigned to problem-solving groups with their classmates. Analyses of the observations showed that many SEM students brought essential background knowledge to the problem-solving work. Thus, explicit instruction by special education teachers was not critical because SEM students understood the problem and sought support from their peers.

A second characteristic is that the co-teachers *used different representations*. They taught concepts to each half of the class, using different representations when parallel teaching, for example, algebraically finding the x and y intercepts of linear equations with the general education teacher and graphically with the special education teacher. The teachers then switched groups to teach the other group [44]. Both co-teachers interacted with all the students, seeking information about students' approaches to the problems, leading to common decisions on how to integrate manipulatives [39]. One teacher provided instructions verbally, while the other wrote them on the board. The co-teachers reported that the students could choose between working at different stations. Furthermore, the students engaged in more challenging tasks and coached each other rather than promptly asking the teachers when they encountered problems [38]. In Jang [49], both co-teachers provided different extra materials suitable for the students when team teaching. Similarly, in Akyuz and Stephan [35], the co-teachers used concrete and abstract representations; for example, a real-world context about a person's net worth moved to an integer form representing assets and debts with + and − signs, respectively. Furthermore, gestures and imagery supported students' mathematical understanding. Likewise, in Bottge et al. [36], the special education teacher provided explicit help to SEM students using visual models, while the general education teacher explained mathematical concepts aloud.

A third theme is that co-teaching implies *flexible* mathematics teaching that accommodates students different strengths still focusing on core mathematical ideas. In Jang [49], students stated that when co-teachers provided them with different ways of solving math problems, they had opportunities to learn to think differently. The co-teachers approached the materials from different angles. The students considered that this helped them improve their final exam performance. By focusing on individual students' needs, the co-teachers in Fresko et al. [39] dealt with different learning problems and identified students' progress. Students commented that the co-teachers different instructional styles helped them understand the material better than with one teacher. Students in King-Sears and Strogilos [40] stated that having co-teachers diversified teaching methods and explanations. However, no details on how are elaborated. The co-teachers were learning-oriented, indicating they were more concerned with individual students' progress. The students studied for their own sakes and not to outperform others; this can enable those struggling to engage irrespective of whether they may be able to be at par with other students.

4.2.2. Co-Teaching Models When Focusing on All Students' Inclusion

Six studies used a co-teaching setting consisting of a mathematics teacher and a special education teacher. Models used include station teaching [38,44], team teaching [36,38,44], parallel and alternative teaching [38], and one teach, one assist [35,36,38,40]. Rimpola [43] focused on the planning phase and did not specify any co-teaching model.

In Akyuz and Stephan [35], during planning, the mathematics teacher focused on students' content goals, and the special education teacher utilized the students' Individual Education Program goals. Nevertheless, teaching strategies were discussed and commonly chosen based on both teachers' professional knowledge. The co-teachers used their knowledge regarding students to decide how best to support them during whole-class discussions, focusing on inquiry teaching in mathematics that corresponds to the needs of the SEN students. The general teacher led the whole-class discussions. However, the special education teacher approved of this because they were observing and learning to lead whole-class discussions.

Furthermore, the co-teachers in Rimpola [43] collaboratively planned ways to support all students in learning geometry and algebra. The assumptions in the study were that the collaborative planning phase might benefit the co-teachers' learning by allowing them to develop a better understanding of the mathematics content. Similar to Akyuz and Stephan [35], the co-teachers in Bottge et al. [36] had specific roles. The special education teacher provided visual models, whereas the general teacher explained the mathematical concept aloud. Contrastingly, the co-teachers in Carty and Farrell [38] reported mutual

learning opportunities when taking turns to lead and assist, such as observing different ways of explaining mathematical concepts. All students had additional opportunities to ask questions based on increased teacher availability; this improved the monitoring of students' progress and enhanced the possibility of identifying students who were not able to work to their fullest potential. In Walmsley and Hickman [44], the two teachers taught together at the beginning and end of the class. In between, they altered their teaching to separate students into two groups based on their different educational needs. The two groups were taught different concepts, with each co-teacher using different representations. In King-Sears and Strogilos [40], the co-teachers explained mathematics in various ways, leading to increased learning opportunities and methods.

The co-teaching setting in the seventh and eighth studies comprised an external expert and an internal teacher [39,42]. In Fresko et al. [39], a consultant teacher—with prior experience working as a mathematics instructor—collaborated with a mathematics teacher. Three kinds of co-teaching models appeared in this case: (i) *integrative style* (the consultant's lesson was a direct continuation of the teacher's during the week), (ii) *separate topics style* (the consultant and the teacher divided the curricular topics), and (iii) *lecturer-assistant style* (the consultant generally provided an opening lesson explaining the new material, and the teacher was responsible for reinforcement, drilling, and application during the week). Conversely, Polly [42] examined the kind of support elementary teachers sought from an external expert coach and how such support influenced their teaching. In this study, co-teaching was an outcome; that is, some of the participating teachers requested co-planning and co-teaching with the outside expert. Thus, the participating teachers sought feedback from the experts about enacting rich tasks that allow students to apply multiple representations and explore mathematical connections.

The ninth study in this category used a co-teaching setting consisting of two mathematics teachers commonly planning, teaching, and evaluating using station teaching [49].

4.3. A Brief Summary

The results show that in studies that connect co-teaching to inclusion, sometimes a particular student group with varying abilities is to be included, and at other times *all* students' learning in mathematics is foregrounded. In the studies focusing on *inclusive mathematics education concerning students with varying abilities*, inclusive mathematics education implicates the group of students being physically placed in the classroom. The purpose of the co-teaching setting in these studies is for the teachers to use differentiated instructions to meet the diverse educational needs of the student group to be included in the classroom.

In studies where co-teaching is connected to *inclusive mathematics education concerning all students*, the students are not labeled, thus embracing all students. In these studies, inclusive mathematics education addresses students' confidence and self-esteem, and co-teachers use different representations and varied mathematics education to meet all students' mathematical educational needs. The purpose of the co-teaching setting in these studies is for the teachers to provide good opportunities for students' learning in mathematics and to accommodate all students' educational needs—spatial and social as well as didactical inclusion.

5. Discussion and Conclusions

This review investigated what characterizes co-teaching and contributes to students' inclusion in mathematics education. Spatial inclusion refers to the physical placement and time students spend in the same room. Social inclusion refers to student interactions with peers and teachers in social contexts [29]. Thus, neither spatial nor social inclusion are directly connected to students' learning. However, didactical inclusion [29], in this review, implies a focus on students' opportunities to learn mathematics in inclusive settings. Accomplishing mathematics teaching that can meet different achievement levels and enable

positive effects simultaneously across same-aged peers remains challenging [8]. This is what is called didactical inclusion in this paper, which is why this dimension is of interest.

In the reviewed studies that connected co-teaching to the inclusion of all students, co-teaching indicated didactical inclusion, implying that mathematical learning is foregrounded based on the foundation of mathematical confidence for students regarding expressing their mathematical reasoning. This corroborates the results of Civil et al. [10], who addressed the need to develop students' self-confidence and for them to own their mathematical ideas, which has traditionally not been seen as mathematically necessary. According to Civil et al. [10], one way to achieve this goal is by shifting the classroom perspective to the student being the one who knows and creates mathematical knowledge rather than the teacher.

Other characteristics in the reviewed studies that indicated didactical inclusion were the use of different mathematical representations or acknowledging different solutions to tasks to meet students' diverse educational needs. In these studies, the co-teachers provided different ways of presenting mathematical content or diverse strategies to support students' mathematical understanding, which supports the results of earlier studies [12–14]. The use of pedagogical tools can support all students [14] and lead to students more frequently sharing ideas and responding to other students' ideas, taking responsibility for their learning [12], and using gestures or drawings [13]. These results also reflect those of Boaler [8], who found that using different representations and addressing different ways of solving mathematical problems are critical aspects of inclusive mathematics education, focusing on students thriving in mathematics.

A third characteristic in the reviewed studies indicating didactical inclusion was the planning for and implementation of flexible teaching strategies adapted to diverse educational needs in mathematics and to address students' individual progress. However, these studies are not focused on the variation per se; rather, they are based on individual students' educational needs, the issue of providing all students with high-quality tasks they can work on in collaboration, having supportive group members when solving problems, and recognizing reasoning. This finding is consistent with the framework of universal design for learning, which may involve using varied instructional materials and promoting collaborative and differentiated instruction [15]. In this way, the students develop mathematical understanding, boosting their mathematical disposition, which is in line with Hunter et al. [11].

In the reviewed studies connecting co-teaching to the inclusion of all students, the teachers' different professions and competencies are foregrounded, expressed as complementing each other and using their professional abilities flexibly; thus, inclusion is concerned with a way of teaching, in line with Roos [23]. The co-teachers' diverse professional knowledge increases students' possibility of learning mathematics in inclusive settings, thereby progressing towards an inclusive community of equity, in accordance with Ainscow and Sandill [16], who address the organizational factors that may affect schools' ability to stimulate inclusive processes.

The different co-teaching models in the reviewed studies in the categories of co-teaching for including students with varying abilities imply that the two co-teachers, to a certain extent, have leading roles. This can be understood as team teaching, which emphasizes complementing co-teachers' competencies; that is, both teachers' skills can benefit all students, and all students are comfortable consulting either of the two teachers. This echoes Embury and Kroeger [18], who found team teaching to be a co-teaching model that signals equality for both co-teachers in status and power. Thus, if co-teachers adopt a model in which they alternate the leading role, mathematics teaching may have better possibilities of developing processes that facilitate didactical inclusion, that is, mathematics teaching that facilitates all students' learning in mathematics. Specifically, the review indicates that co-teachers using an equal setting, being equally in charge can promote didactical inclusion with teaching adapted to the students' diverse prerequisites.

To conclude, this review on co-teaching in mathematics indicates that co-teaching, if flexibly organized, can contribute to inclusion in mathematics education regarding didactical inclusion by addressing the needs of *all* students using varied mathematics teaching, high-quality tasks to engage all students, and multiple representations to foreground students' learning in mathematics.

Finally, the limitations of this systematic review must be mentioned. In this review, the conceptual framework addresses students with diverse disabilities. The choice of instead using the concept of *SEM students* and not students *with* disabilities can imply dilemmas, such as balancing the students' needs with the educational system's requirements and the potential marginalization of individuals by signaling that disability is a problem [5]. That is not the intention. Instead, the learning context, as in co-teaching, is emphasized as the potential cause of inclusion in spatial, social, and didactical terms.

The limited number of studies is surprising because co-teaching and mathematics teaching are two major issues, each individually well-researched. However, combining the two seems to be just emerging in the research field. Thus, the limited number of studies on co-teaching in mathematics indicates a gap [50]. Articles were searched in five databases; if the scope of the search words had been broadened, it might have resulted in more records. A potential limitation is that one researcher conducted the data analysis. Furthermore, the diversity among the included articles led to a narrative synthesis, whereas another review approach might have generated different results.

Nonetheless, the implications for practice from the current review indicate that adopting co-teaching is a suitable strategy when striving for inclusive mathematics education. Working in flexible educational settings, including with co-teachers skilled in mathematics education as well as the learning needs of SEM students, and focusing on didactical issues for heterogeneous student groups may contribute to students' current and future mathematical learning.

Funding: This research was funded by Vetenskapsrådet [the Swedish Research Council], grant number 2017–06039.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The author declares no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

References

1. Friend, M.; Reising, M.; Cook, L. Co-teaching: An overview of the past, a glimpse at the present, and considerations for the future. *Prev. Sch. Fail. Altern. Educ. Child. Youth* **1993**, *37*, 6–10. [CrossRef]
2. Cook, L.; Friend, M. Co-teaching: Guidelines for creating effective practices. *Focus Except. Child.* **1995**, *28*, 453–479. [CrossRef]
3. Gilbertsson, M.; Lind, M. *Tvålärarskap i Praktiken*, 1st ed.; Studentlitteratur: Lund, Sweden, 2021. (In Swedish)
4. Magiera, K.; Zigmond, N. Co-teaching in middle school classrooms under routine conditions: Does the instructional experience differ for students with disabilities in co-taught and solo-taught classes? *Learn. Disabil. Res. Pract.* **2005**, *20*, 79–85. [CrossRef]
5. Bagger, A.; Roos, H. How research conceptualises the student in need of special education in mathematics. In Proceedings of the Ninth Swedish Mathematics Education Research Seminar (MADIF9), Umeå, Sweden, 4–5 February 2015.
6. Burris, C.C.; Heubert, J.P.; Levin, H.M. Accelerating Mathematics Achievement Using Heterogeneous Grouping. *Am. Educ. Res. J.* **2006**, *43*, 105–136. Available online: http://www.jstor.org/stable/3699404 (accessed on 13 April 2023). [CrossRef]
7. Klang, N.; Karlsson, N.; Kilborn, W.; Eriksson, P.; Karlberg, M. Mathematical problem-solving through cooperative learning—The importance of peer acceptance and friendships. *Front. Educ.* **2021**, *6*, 324. [CrossRef]
8. Boaler, J. Changing students' lives through the de-tracking of urban mathematics classrooms. *J. Urban Math. Educ.* **2011**, *4*, 7–14. [CrossRef]
9. Boaler, J. How a detracked mathematics approach promoted respect, responsibility, and high achievement. *Theory Into Pract.* **2006**, *45*, 40–46. [CrossRef]

10. Civil, M.; Hunter, R.; Crespo, S. Mathematics teachers committed to equity: A review of teaching practices. In *International Handbook of Mathematics Teacher Education*; Bishop, A.J.K., Clements, C., Keitel, J., Laborde, C., Eds.; Brill: Leiden, The Netherlands, 2019; Volume 1, pp. 243–273. [CrossRef]
11. Hunter, J.; Hunter, R.; Anthony, G. Shifting towards equity: Challenging teacher views about student capability in mathematics. *Math. Educ. Res. J.* **2020**, *32*, 37–55. Available online: https://link.springer.com/article/10.1007/s13394-019-00293-y (accessed on 20 February 2023). [CrossRef]
12. Prediger, S.; Buró, R. Fifty ways to work with students' diverse abilities? A video study on inclusive teaching practices in secondary mathematics classrooms. *Int. J. Incl. Educ.* **2021**, 1–20, *ahead-of-print*. [CrossRef]
13. Lindenskov, L.; Lindhardt, B. Exploring approaches for inclusive mathematics teaching in Danish public schools. *Math. Educ. Res. J.* **2020**, *32*, 57–75. [CrossRef]
14. Faragher, R.M.; Clarke, B.A. Inclusive practices in the teaching of mathematics: Some findings from research including children with Down syndrome. *Math. Educ. Res. J.* **2020**, *32*, 121–146. [CrossRef]
15. Policy Analysis for California Education. Available online: https://edpolicyinca.org/publications/increasing-access-universally-designed-mathematics-classrooms (accessed on 1 May 2023).
16. Ainscow, M.; Sandill, A. Developing inclusive education systems: The role of organisational cultures and leadership. *Int. J. Incl. Educ.* **2010**, *14*, 401–416. [CrossRef]
17. Nichols, J.; Dowdy, A.; Nichols, C. Co-teaching: An educational promise for children with disabilities or a quick fix to meet the mandates of no child left behind? *Education* **2010**, *130*, 647–651.
18. Embury, D.C.; Kroeger, S.D. Let's ask the kids: Consumer constructions of co-teaching. *Int. J. Spec. Educ.* **2012**, *27*, 102–112.
19. Friend, M. Co-teaching: A simple solution that isn't simple after all. *J. Curric. Instr.* **2008**, *2*, 9–19. [CrossRef]
20. Scruggs, T.E.; Mastropieri, M.A.; McDuffie, K.A. Co-teaching in inclusive classrooms: A metasynthesis of qualitative research. *Except. Child.* **2007**, *73*, 392–416. [CrossRef]
21. Friend, M.; Cook, L.; Hurley-Chamberlain, D.; Shamberger, C. Co-teaching: An illustration of the complexity of collaboration in special education. *J. Educ. Psychol. Consult.* **2010**, *20*, 9–27. [CrossRef]
22. UN. Convention on the Rights of Persons with Disabilities. [A/RES/61/106]. 2006. Available online: https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_61_106.pdf (accessed on 27 April 2021).
23. Roos, H. Inclusion in mathematics education: An ideology, a way of teaching, or both? *Educ. Stud. Math.* **2018**, *100*, 25–41. [CrossRef]
24. McLeskey, J.; Waldron, N.L. Making differences ordinary in inclusive classrooms. *Interv. Sch. Clin.* **2007**, *42*, 162–168. [CrossRef]
25. Nilholm, C.; Alm, B. An inclusive classroom? A case study of inclusiveness, teacher strategies, and children's experiences. *Eur. J. Spec. Needs Educ.* **2010**, *25*, 239–252. [CrossRef]
26. Waitoller, F.R.; Artiles, A.J. A decade of professional development research for inclusive education: A critical review and notes for a research program. *Rev. Educ. Res.* **2013**, *83*, 319–356. [CrossRef]
27. Roos, H. Diversity in an inclusive mathematics classroom—A student perspective. In Proceedings of the Tenth Congress of the European Society For research in Mathematics Education (CERME10), Dublin, Ireland, 1–5 February 2017. Available online: http://lnu.diva-portal.org/smash/get/diva2:1192763/FULLTEXT01.pdf (accessed on 21 December 2022).
28. Kauffman, J.M.; Badar, J. Instruction, not inclusion, should be the central issue in special education: An alternative view from the USA. *J. Int. Spec. Needs Educ.* **2014**, *17*, 13–20. [CrossRef]
29. Asp-Onsjö, L. Åtgärdsprogram-Dokument Eller Verktyg? En fallstudie i en kommun [Individual Educational Plan—Document or Tools. A Case Study in One Municipality]. Ph.D. Dissertation, University of Gothenburg, Gothenburg, Sweden, 3 November 2006.
30. Popay, J.; Roberts, H.; Sowden, A.; Petticrew, M.; Arai, L.; Rodgers, M.; Britten, N.; Roen, K.; Duffy, S. *Guidance on the Conduct of Narrative Synthesis in Systematic Reviews: A Product from the ESRC Methods Programme*; Institute for Health Research: London, UK, 2006; Volume 1, p. b92.
31. Dixon-Woods, M.; Cavers, D.; Agarwal, S.; Annandale, E.; Arthur, A.; Harvey, J.; Hsu, R.; Katbamna, S.; Olsen, R.; Sutton, A.J. Conducting a critical interpretive synthesis of the literature on access to healthcare by vulnerable groups. *BMC Med. Res. Methodol.* **2006**, *6*, 35. [CrossRef]
32. Gough, D.; Oliver, S.; Thomas, J. *An Introduction to Systematic Reviews*; Sage: Los Angeles, CA, USA, 2017.
33. Jao, L.; McDougall, D. Moving beyond the barriers: Supporting meaningful teacher collaboration to improve secondary school mathematics. *Teach. Dev.* **2016**, *20*, 557–573. [CrossRef]
34. Mirza, M.S.; Iqbal, M.Z. Impact of collaborative teaching (CT) on mathematics students' achievement in Pakistan. *J. Res. Reflect. Educ.* **2014**, *8*, 13–21.
35. Akyuz, D.; Stephan, M. Co-teaching practices that build autonomy for students with learning disabilities in mathematics. *Int. J. Math. Educ. Sci. Technol.* **2022**, *53*, 920–947. [CrossRef]
36. Bottge, B.A.; Toland, M.D.; Gassaway, L.; Butler, M.; Choo, S.; Griffen, A.K.; Ma, X. Impact of enhanced anchored instruction in inclusive math classrooms. *Except. Child.* **2015**, *81*, 158–175. [CrossRef]
37. Brendle, J.; Lock, R.; Piazza, K. A study of co-teaching identifying effective implementation strategies. *Int. J. Spec. Educ.* **2017**, *32*, 538–550.
38. Carty, A.; Farrell, A.M. Co-teaching in a mainstream post-primary mathematics classroom: An evaluation of models of co-teaching from the perspective of the teachers. *Support Learn.* **2018**, *33*, 101–121. [CrossRef]

39. Fresko, B.; Ben-Chaim, D.; Carmeli, M. Consultant as Co-teacher: An intervention for improving mathematics instruction. *J. Educ. Teach.* **1994**, *20*, 83–96. [CrossRef]
40. King-Sears, M.E.; Strogilos, V. An exploratory study of self-efficacy, school belongingness, and co-teaching perspectives from middle school students and teachers in a mathematics co-taught classroom. *Int. J. Incl. Educ.* **2020**, *24*, 162–180. [CrossRef]
41. Magiera, K.; Smith, C.; Zigmond, N.; Gebauer, K. Benefits of co-teaching in secondary mathematics classes. *Teach. Except. Child.* **2005**, *37*, 20–24. [CrossRef]
42. Polly, D. Supporting mathematics instruction with an expert coaching model. *Math. Teach. Educ. Dev.* **2012**, *14*, 78–93.
43. Rimpola, R.C. Collaborative planning and teacher efficacy of high school mathematics co-teachers. *Educ. Plan.* **2014**, *21*, 41–53.
44. Walmsley, A.L.; Hickman, A. Class within a class: A systematic approach to teaching high school mathematics students with special needs. *Focus Learn. Probl. Math.* **2007**, *29*, 1–12.
45. Walsh, J.M. Co-teaching as a school system strategy for continuous improvement. *Prev. Sch. Fail. Altern. Educ. Child. Youth* **2012**, *56*, 29–36. [CrossRef]
46. Saint-Laurent, L.; Dionne, J.; Giasson, J.; Royer, É.; Simard, C.; Piéarard, B. Academic achievement effects of an in-class service model on students with and without disabilities. *Except. Child.* **1998**, *64*, 239–253. [CrossRef]
47. Ansari, B.I.; Wahyu, N. Mathematics understanding and anxiety in collaborative teaching. In Proceedings of the First Ahmad Dahlan International Conference on Mathematics and Mathematics Education, Daera Istimewa, Yogyakarta, Indonesia, 13–14 October 2017. [CrossRef]
48. Kane, J.; Henning, J.E. A case study of the collaboration in mathematics between a fourth-grade teacher and a talented and gifted coordinator. *J. Educ. Gift.* **2004**, *27*, 243–266. [CrossRef]
49. Jang, S.-J. Research on the effects of team teaching upon two secondary school teachers. *Educ. Res.* **2006**, *48*, 177–194. [CrossRef]
50. Garderen, D.V.; Scheuermann, A.; Jackson, C.; Hampton, D. Supporting the collaboration of special educators and general educators to teach students who struggle with mathematics: An overview of the research. *Psychol. Sch.* **2009**, *46*, 56–78. [CrossRef]