



JÖNKÖPING UNIVERSITY

*School of Education and  
Communication*

# **Interventions influencing mainstream pre-service teachers' attitudes towards inclusion**

**A systematic literature review from 2000 to 2015**

**Camille Richert**

One year master thesis 15 credits  
Interventions in Childhood

Supervisor  
Johan Malmqvist

Spring Semester 2016

Examiner  
Eva Björck-Åkesson

## ABSTRACT

---

Author: Camille Richert

### **Interventions influencing mainstream pre-service teachers' attitudes towards inclusion**

A systematic literature review from 2000 to 2015

Mainstream teachers are key for developing inclusive schools. Many times they do not feel prepared to deal with inclusive classrooms and may have negative attitudes towards inclusion. The aim of this study was to examine interventions that can affect mainstream pre-service teachers' attitudes towards inclusion during their studies. Nine studies were identified through a systematic literature review and twelve interventions emerged. Results show that interventions focusing on imparting knowledge of inclusion through a study unit or through an infusion approach can create a positive effect in pre-service teachers' attitudes towards inclusion. Some factors found to influence the change in attitudes towards inclusion were knowledge of inclusion, gender, and interaction with people with disabilities. This study gives a promising view of the actions that are being taken towards having more inclusive teachers. Nevertheless, inclusion is a complex concept and future research on the content imparted during the interventions and the scales used to measure the change is needed.

Pages: 44

---

Keywords: *Attitudes, change of attitudes, general education, inclusion, intervention, mainstream schools, pre-service teachers, student teacher, university*

---

**Postal address**

Högskolan för lärande  
och kommunikation (HLK)  
Box 1026  
551 11 JÖNKÖPING

**Street address**

Gjuterigatan 5

**Telephone**

036-101000

**Fax**

036162585

# Table of Content

<b>1</b>	<b>Introduction</b>	<b>1</b>
1.1	Inclusion	1
1.2	Pre-service teacher education	3
1.3	Teacher’s attitudes towards inclusion	4
1.4	Rationale	6
1.5	Aim	6
1.6	Research questions	6
<b>2</b>	<b>Method</b>	<b>6</b>
2.1	Search procedure	6
2.2	Selection process	8
2.2.1	Title and abstract screening	8
2.2.2	Full text screening	9
2.2.3	Quality assessment	10
2.2.4	Peer review	10
2.3	Data extraction	11
<b>3</b>	<b>Results</b>	<b>11</b>
3.1	Interventions for affecting attitudes	12
3.1.1	Type of interventions	12
3.1.2	Content of the interventions	13
3.2	Change in attitudes	16
3.3	Factors influencing change in attitudes	18
<b>4</b>	<b>Discussion</b>	<b>19</b>
4.1	Reflections on findings related to other research	19
4.2	Methodological issues and limitations	22
4.3	Future research	22
<b>5</b>	<b>Conclusion</b>	<b>23</b>
	<b>References</b>	<b>24</b>
	<b>Appendix</b>	<b>29</b>

## I Introduction

Ever since the Salamanca Statement in 1994, the concept of “inclusion” has been influencing international policies that aim towards acknowledging and promoting the inclusion of all students in regular classrooms. This has affected mainstream teachers and how they approach inclusion in their classrooms. Teachers have a great influence in making inclusion a reality in mainstream schools, but many times they feel unprepared to deal with inclusive settings. Their attitudes towards inclusion seem to be an important factor in creating inclusive schools and communities. Therefore, affecting teachers’ attitudes is of great importance and it might be more favorable to do so during their pre-service education.

### I.1 Inclusion

The term “inclusion” was first introduced in 1994 when the Salamanca Statement and Framework for Action on Special Needs Education took place (UNESCO, 1994). Before this, “integration” or “mainstreaming” were usually the words used to support the right to education for all children, no matter their characteristics. Nevertheless, these concepts focus more on adapting the curriculum to fit one student’s needs, and trying to assimilate students who have special needs into a non-changeable school system (Reindal, 2016; Vislie, 2003). Inclusion, on the other hand, focuses more on all children and not only those who are identified as having Special Educational Needs (SEN) (Vislie, 2003). The premises of inclusion in education, as stated in the Salamanca Statement (UNESCO, 1994), are that:

“Every child has a fundamental right to education, and must be given the opportunity to achieve and maintain an acceptable level of learning; every child has unique characteristics, interests, abilities and learning needs; education systems should be designed and educational programs implemented to take into account the wide diversity of these characteristics and needs; and those with special educational needs must access regular schools which should accommodate them within a child-centered pedagogy capable of meeting these needs; regular schools with this inclusive orientation are the most effective means of combating discriminatory attitudes, creating welcoming communities, building an inclusive society and achieving education for all; more over, they provide an effective education to the majority of children and improve the efficiency and ultimately the cost-effectiveness of the entire education system.” (p. viii-ix)

While inclusion might have started as a reaction to the exclusion of children with disabilities, it soon became a concept that goes beyond this group of children, making it applicable to all students (Tjernberg & Mattson, 2014). But the concept of “inclusion” is not only related to a school setting. It is a concept that can influence all parts surrounding a child’s environment: the family, the school, the community, the culture, the policies, etc. (Bornman & Rose, 2010). It also goes beyond children being in a classroom, but rather participating (engaging) in the activities (Adair, Ullenhag, Keen, Granlund, & Imms, 2015; Falkmer, Oehlers, & Granlund, 2013). Taking into account that being present “in a mainstream school environment does not automatically lead to participation, students who are physically integrated

may still be socially excluded” (Falkmer, Granlund, Nilholm, & Falkmer, 2012, p. 191). A child is by definition of the United Nations (UN) an active participant in its environment (Hwang, Granlund, Liao, & Kang, 2013). Therefore, inclusion is also about helping children become active participants in everyday life situations, such as learning and socializing in school.

The concept of inclusion has been difficult to understand, define and implement ever since the Salamanca Statement. Recently, a reaffirmation of inclusion and education for all has been made with the Incheon Declaration (UNESCO, 2015), where several countries came together and created an agenda for 2030 that strives for inclusion and equity in education. Nonetheless, some people still relate inclusion only to children who have been diagnosed with SEN (Donnelly & Watkins, 2011). It is as if inclusion is merely a new word for integration or even mainstreaming. Inclusion has also become a complex and controversial issue, raising questions about whether it focuses on fully integrating children with SEN into the mainstream classroom or more towards helping all children participate in the classroom as well as in the community (Booth, Nes, & Strømstad, 2009; Farrell & Ainscow, 2002). This has made the definition of inclusion rather difficult, and many authors have refrained from presenting a singular definition; e.g. Acedo, Ferrer and Pàmies (2009) mention that Ainscow refers to inclusion “in relation to disability and special educational needs, as a response to disciplinary exclusions, in relation to vulnerable groups, as a means of promoting schooling for all, and as Education for All” (p. 228). Furthermore, UNESCO (2005) identifies four key elements of inclusion: inclusion is a process; inclusion is concerned with the identification and removal of barriers; inclusion is about the presence, participation and achievement of all students; and inclusion involves a particular emphasis on those groups of learners who may be at risk of marginalization, exclusion or underachievement (p. 15-16). All and all, inclusion seems to be a very broad concept that is mostly ongoing and focuses on all children giving a special emphasis to those who need special support.

Inclusion can have a positive impact on many levels, but it also faces many barriers. It helps learners with SEN improve their self-esteem through learning and sociability. It also helps create a more equal and just society since children without disabilities grow up in inclusive environments, and it is more economically viable (Mitchell, 2014). Inclusion is also viewed by the United Nations as “fundamental to achieving human, social and economic development” (Mitchell, 2014, p. 300). Considering all of the above, and taking into account that inclusion takes place in the regular classroom, it is evident that teachers play a major role in making inclusion possible (Ainscow, 2007; Bornman & Rose, 2010; Falkmer et al., 2012; Mitchell, 2014). Still, one of the biggest barriers for inclusion is the inadequate knowledge and skill level of teachers; this limits opportunities for participation and turns schools towards integration and segregation rather than inclusion (Bornman & Rose, 2010). Also, teacher’s negative attitudes towards inclusion can limit the possibilities of inclusion for children with SEN; since as Galović, Brojčin and Glumbić (2014) mention, successful inclusion is influenced not only by resources and curricula but also by attitudes. Therefore, in order to achieve a successful inclusive environment the focus must be not only on teachers’ knowledge and skills, but also on their attitudes.

## 1.2 Pre-service teacher education

The transition towards inclusive education has made teaching more demanding and challenging, however little has changed in teacher education (Forlin, 2010). Even though some changes have been made, the question of whether they are on the right path is still being asked. It seems like inclusion is still taught as if it were something special, something different, instead of it being included throughout teacher education and not as a separate “special” class (Forlin, 2010). Teachers have been asking for more training ever since children with disabilities started being integrated into regular classrooms and they still feel unprepared and uncertain (Avramidis & Norwich, 2002; Forlin, 2010; Scruggs & Mastropieri, 1996).

Teacher education is key when it comes to furthering inclusive practices in regular schools (Engelbrecht, 2013). In fact, many have claimed that teacher education is the answer for having confident, efficacious teachers who are not only active towards inclusion but are also striving for inclusive reforms (Forlin, 2010). The Salamanca Statement (UNESCO, 1994) emphasizes that “pre-service training programs should provide to all student teachers, primary and secondary alike, positive orientation toward disability, thereby developing an understanding of what can be achieved in schools with locally available support services” (p. 27).

Across the world, teacher education often consists of a three to five year bachelor program that includes both theoretical learning and practical teaching experiences (Forlin, 2010), as well as post-graduate programs. During this time, teachers might learn some things about inclusion and students with learning difficulties (Rouse, 2010). There might be a course focusing on teaching strategies, disabilities and special needs, what and how children learn, classroom organization and management, where to get help when necessary, identifying and assessing difficulties, assessing and monitoring children’s learning, and the legislative and policy context (Rouse, 2010). Even though such content is important, it is sometimes not available during pre-service teachers education. Most importantly it lacks focus on broader issues such as exclusion, co-working, critical thinking towards the curriculum and pedagogy that is used, and how to identify and overcome the barriers to education for all students (Rouse, 2010; Slee, 2010).

Four themes are suggested by Slee (2010) for educating teachers inclusively: (1) understanding and dismantling exclusion, in order to help teachers identify exclusion in the school environment and stop it; (2) reclaiming curriculum and pedagogy for teachers, which refers to not only training teachers in how to modify the curriculum, but rather question the current pedagogy and curriculum in schools and become critical thinkers; (3) encouraging teachers to work with parents and the community will expand the school and help inclusion (teachers as communitarian workers); and (4) thinking about archers as well as targets, by helping teachers develop a less-restrictive vision of students, while focusing more on their creativity and capacities rather than outcome measures.

Helping teachers develop an inclusive mindset is an ongoing challenge that will probably not be accomplished just by including a special education course during pre-service teacher education (Slee, 2010). A more broad and critical perspective needs to be addressed throughout teacher education. Developing new ways towards helping teachers believe that all children are worth educating and can learn, that they have the capacity to make a difference in children's lives, and that such work is their responsibility and not only a task for specialists, are perspectives to be considered during teachers education (Rouse, 2010, p. 50). This way of thinking can affect teacher's attitudes towards inclusion. Interventions during pre-service teacher education that aim to help teachers understand and implement inclusion in their classrooms need to address not only knowledge of inclusion but also attitudes towards inclusion.

### **1.3 Teacher's attitudes towards inclusion**

Many definitions have been given to try to explain the concept of "attitudes" in psychology. In short attitudes are the evaluation or judgment a person does of an object, a person or a situation (Crano & Prislin, 2008; Maio & Haddock, 2010). This evaluation can be based on different processes. One model to help explain this process is the Multicomponent Model of Attitude, which states that "attitudes are summary evaluations of an object that have cognitive, affective and behavioral components" (Maio & Haddock, 2010, p. 25). Where the cognitive component refers to the beliefs, thoughts and attributes a person associates with an object; the affective component is about the feelings or emotions a person links to an attitude object; and the behavioral component focuses on the past behaviors or experiences regarding an attitude object (Maio & Haddock, 2010). Nevertheless, the Multicomponent Model is just one theory of how attitudes are formed, Olson and Kendrick (2008) state that attitudes can also be formed through unconscious processes. They can have an unlearned or inherited component, and they might be a result from humans' evolutionary past.

Moreover, attitudes play an important role in the human self. They influence our behavior and our thoughts, and the type of information we are likely to process, seek out, and perceive (Maio & Haddock, 2010). As Albarracín et al. (2008) noted "attitudes are important because they shape people's perceptions of the social and physical world and influence overt behaviors" (p. 19). Attitudes can change over time, and different factors, such as acquired knowledge, can influence this change (Crano & Prislin, 2008; Maio & Haddock, 2010). However, attitudes are difficult to measure and the change in an attitude and its lasting effect have been questioned; does the change stay or do people return to old attitudes after a period of time? (Crano & Prislin, 2008; Favazza, Phillipsen, & Kumar, 2000; Maio & Haddock, 2010). Still and all, attitudes are very important and research could help us understand human beliefs and behavior (Olson & Kendrick, 2008).

Taking into account that having negative and determinist attitudes about children's worth and abilities can prevent teachers from new ways of thinking about pedagogy (Rouse, 2010), a lot of research has been made in relation to teachers' attitudes towards inclusion. There are conflictive results; while some

establish that teachers hold positive attitudes towards inclusion, other studies show that they have more neutral attitudes or even somewhat negative (Galović et al., 2014). There is also research showing that even though teachers have a positive attitude towards the general philosophy of inclusive education, they might show negative attitudes towards including certain children that have severe disabilities (Avramidis & Norwich, 2002; Scruggs & Mastropieri, 1996). Moreover, teacher's attitudes towards inclusion have been proven to be of utmost importance for promoting inclusive practices (Forlin, 2010; UNESCO, 2005). However, Avramidis and Norwich (2002) state in their literature review that overall teachers' attitudes towards the implementation of inclusion tend to be negative, and training both for pre-service and in-service teachers should be a priority.

Mainstream pre-service and in-service teachers' attitudes towards inclusion may be influenced by different factors. Some research states that their positive attitudes depend strongly on the experience they have with students who have SEN or are viewed as "challenging" (UNESCO, 2005). On the contrary, there is other conflicting research that have found no correlation between teacher's experience with children with SEN or people with disabilities and their attitudes towards inclusion (Avramidis & Norwich, 2002). Therefore, it may be concluded that their attitudes depend on how positive or negative their experience with children with SEN or people with disabilities was (Muwana & Ostrosky, 2014).

Further, teachers who perceive themselves as more competent and who have higher self-efficacy or confidence levels in teaching children with SEN, seem to have more positive attitudes towards inclusion (Avramidis, Bayliss, & Burden, 2000; Sharma, Loreman, & Forlin, 2012). Self-efficacy can be promoted through knowledge, when teachers learn about inclusion and teaching strategies they can use inside an inclusive classroom. They are more likely to have higher confidence levels and therefore be more open towards inclusion (Loreman, Sharma, & Forlin, 2013; Tschannen-Moran & Hoy, 2001; Varcoe & Boyle, 2014). When it comes to gender there are some studies that have found differences in the attitudes towards inclusion between females and males, where males show more favorable attitudes (Muwana & Ostrosky, 2014) or on the contrary where females tend to be more positive towards inclusion (Avramidis et al., 2000; Garriott, Miller, & Snyder, 2003). Nevertheless, other research has shown no correlation between gender and positive attitudes towards inclusion (Varcoe & Boyle, 2014).

All and all, regardless of the complexity of inclusion and the difficulties for defining it, it's a concept that has been influencing the field of education. Inclusion in its core may be difficult to understand and implement. Still, key factors about inclusion include a focus on equality inside and outside the classroom, a way to transform teachers' thinking and willingness to change the way of teaching, a road towards changing the principles of schooling. It is not only about having (integrating) children with disabilities or SEN inside the classroom, it's about transforming the pedagogical approach towards a more flexible one, where all children can learn.

## 1.4 Rationale

Mainstream pre-service teachers attitudes towards inclusion can determine how they approach the idea of teaching all children, including those who might need extra support inside the regular classroom. Mainstream pre-service teachers attitudes can be positively affected during their teacher education through increasing knowledge about inclusion and connecting it with practice. Therefore, it is important to examine research that has focused on interventions in pre-service education that aimed to affect mainstream pre-service teachers attitudes towards inclusion.

## 1.5 Aim

The aim of this systematic literature review was to examine interventions that affect the attitudes towards inclusion among mainstream pre-service teachers.

## 1.6 Research questions

- What are the interventions undertaken for affecting attitudes towards inclusion among mainstream pre-service teachers?
- How do mainstream pre-service teachers attitudes change after the interventions?
- What factors influence the change of attitudes towards inclusion?

## 2 Method

A systematic literature review was performed. This method refers to a means of identifying, synthesising and appraising relevant research studies on a specific topic, as well as summarizing their results and critically analyzing them (Jesson, Matheson, & Lacey, 2013). Moreover, it comprises a rigorous and comprehensive search of all relevant studies, followed by a selection process according to a predetermined inclusion and exclusion criteria. A quality assessment of the studies is also performed.

### 2.1 Search procedure

The database search for this systematic literature review was performed in March 2016 using ERIC, Academic Search Elite (ASE), Science Direct (SD) and PsycINFO (PI). These databases integrate information on the field of education and psychology. A flowchart of the search procedure can be found in Appendix A. Firstly an inclusion and exclusion criteria was established in accordance to the aim and research questions of this study (see Table 2.1). Then, each database was searched according to their search procedure and using different search words to ensure the maximum amount of articles related to the aim of this study (see Appendix B, for a table displaying the search words). In some databases truncations (\*) were used to yield more detailed results.

The search procedure in ERIC was done using the databases Thesaurus. The search words included ("Teacher Education Programs" OR "Preservice Teacher Education" OR "Preservice Teachers"

OR "Teacher Education" OR "Teacher Education Curriculum" OR "Education Courses" OR "Teacher Characteristics" OR "Knowledge Base for Teaching" OR "Teacher Qualifications" OR "Student Teachers" OR "Teacher Centers") AND ("Teacher Attitudes" OR "Attitudes" OR "Student Teacher Attitudes" OR "Attitudes toward Disabilities") AND "Inclusion". A total of 181 articles were found in this database.

Table 2.1

*First inclusion and exclusion criteria*

<b>Inclusion criteria</b>	<b>Exclusion criteria</b>
- Pre-service teacher's education	- In-service teacher's
- Pre-service teacher's attitudes/perceptions towards inclusion	- Pre-service knowledge/self efficacy of inclusion, attitudes towards only one specific disability
- General education elementary (7-12 years) programs	- Special Education programs; Preschool (0-6 years), Secondary or High-school programs (13-18 years); only one specific mayor focus
- Quantitative, qualitative or mixed method interventions with two or more time points	- One time point interventions
- Measure of change in attitudes/perceptions of inclusion after an intervention (pre-post tests)	- Measure of change in attitudes/perceptions of inclusion because of past experiences (no pre-test)
- Articles published as full texts in peer-reviewed journals	- Abstracts, conference papers, theses, books, other literature
- Published in English between January 2000 – December 2015	- Not published in English or outside the inclusion dates

Two searches were done in ASE. The first search was done through the "free" search procedure from the database. It included the words Teacher education AND attitudes AND inclusion. The number of articles found for this first search was 220. The second search was conducted in order to ensure maximum inclusion of articles related to the aim of this review. It was done with the "advanced" search procedure, using the words ("student teacher" OR "preservice teacher" OR "teacher education") AND (attitudes OR perceptions) AND inclus\*. The second search gave a total of 243 articles.

The database SD was also searched twice. Both searches were done using the "expert" search procedure from the database. Also, the connector "W/n" was used in order to prioritize search terms; "W" refers to "within" and "n" represents the maximum number of words between search terms. In this case "W/50" means that both terms are found in the same paragraph. The first one included the search words ("teacher education" OR "preservice teacher education" AND NOT "inservice teacher" AND NOT "preschool" AND NOT "secondary" AND NOT "high school") AND ((attitude W/50 inclus\*) OR (perception W/50 inclus\*)). From this search 141 articles were found. Very few studies were found only on pre-service teachers majoring in elementary education. Therefore, a change in the inclusion and exclusion criteria was done during the full text screening (see Table 2.2); preschool, primary, secondary and high school pre-service teachers were included. A second search was then conducted in this database.

The search words used for this second search were ("teacher education" OR "preservice teacher education" AND NOT "inservice teacher") AND ((attitude W/50 inclus\*) OR (perception W/50 inclus\*)). A total of 215 articles were found from the second search.

Table 2.2

*Definitive inclusion and exclusion criteria*

Inclusion criteria	Exclusion criteria
- Pre-service teacher's education	- In-service teacher's
- Pre-service teacher's attitudes/perceptions towards inclusion	- Pre-service knowledge/self efficacy of inclusion, attitudes only towards one specific disability
- General education programs*	- Special Education programs, only one specific mayor focus*
- Quantitative, qualitative or mixed method interventions with two or more time points	- One time point interventions
- Measure of change in attitudes/perceptions of inclusion after an intervention (pre-post tests)	- Measure of change in attitudes/perceptions of inclusion because of past experiences (no pre-test)
- Articles published as full texts in peer-reviewed journals	- Abstracts, conference papers, theses, books, other literature
- Published in English between January 2000 – December 2015	- Not published in English or outside the inclusion dates

*Note.* \* Indicates the criteria that was changed

Finally, the database PI was searched using the databases Thesaurus. The search words were ("Preservice Teachers" OR "Teacher Education") AND ("Teacher Attitudes" OR "Attitudes" OR "Perception") AND ("Mainstreaming" OR "Mainstreaming (Educational)"). It is important to mention that the word "mainstreaming" was used because the databases Thesaurus uses it as a main term for "inclusion". The number of articles found was 45.

## 2.2 Selection process

A total of 1,045 articles were found of which 337 articles were duplicates and excluded. A selection process was done with the remaining 708 articles. This process consisted of two steps. The first step consisted of a title and abstract screening, followed by the second step where a full text screening was done. A flowchart displaying this process can be found in Appendix A. Also, a quality assessment and a peer review process were done.

### 2.2.1 Title and abstract screening

The title and abstract screening was done in the 708 articles remaining after the exclusion of duplicates. The online tool Covidence (Mavergames, 2013) was used as a support for screening the abstracts of the articles. The abstracts that were not shown in Covidence were searched for and read elsewhere. An inclusion and exclusion criteria was used for the selection process in this step (see Table 2.2). After screen-

ing through the articles, 645 were excluded because of reasons related to the exclusion criteria. E.g. the population of some studies had in-service teachers, and the focus of this study was on pre-service teachers. Studies that had pre-service teachers studying special education were excluded because it was assumed this group of teachers already held positive attitudes towards inclusion. The studies that focused only on teachers studying a specific mayor (e.g. 100% of the population was pre-service physical education teachers) were also excluded, since the focus was more on a social perspective and not so specific. Also, some studies measured attitudes towards one disability (e.g. down syndrome), or only focused on pre-service teachers self-efficacy levels, these were excluded because the focus was on attitudes towards inclusion. Some more duplicates were identified and excluded during the title and abstract screening. A lot of articles that didn't include enough information in their abstract to determine if they should be included or excluded were included for full text screening. This was done to ensure a valid exclusion or inclusion according to the criteria. When changing the inclusion and exclusion criteria (see Table 2.2), the only database that needed to be searched again was Science Direct. Moreover, another screening at title and abstract level of the articles was done to ensure that no articles were excluded because of the exclusion criteria used before. Some articles were included for full text screening after this. This left 63 articles for full text screening.

### **2.2.2 Full text screening**

At the beginning of the full text screening eight articles were excluded because the full text was not available to the researcher. Full text screening was done on the remaining 55 articles by checking one more time that the article met the inclusion and exclusion criteria. Full text screening was done in two steps. The first included reading the method part of the papers, in order to determine if the studies were interventions with two or more time points, and if their population matched the inclusion and exclusion criteria. While reading the texts an article by Lambe and Bones (2008) was excluded and in its place the article by Lambe (2007) was added by hand search, since it was a more complete version of their longitudinal study. In addition, another 47 articles were excluded mainly because they didn't focus on a pre-post intervention, or part of the population was studying special education or only studying one specific teaching subject. This left 15 articles to include.

Afterwards, as a second step, a more detailed screening of the articles was done. A protocol was used to obtain more information on the population, the interventions, the outcomes and the results (see Appendix C, at the full text section of the protocol). Six articles were excluded after this for not having information on attitudes towards inclusion in the results, only focusing on attitudes towards children with Down Syndrom, or the intervention was focused on special education. E.g. one article seemed to fit the criteria in the protocol quite well, until in their limitations they mentioned that their intervention was done in a "special education" setting and not in an "inclusive" setting, which might have made the students more prone to special education than inclusion, this article was then excluded. Finally, nine articles in total were used for the data analysis.

### 2.2.3 Quality assessment

A quality assessment was done using a quality assessment tool (see Appendix C, for the complete version of the quality assessment tool). The tool was adapted from the Quantitative Research Assessment Tool (CCEERC, 2013). The adaptation of the tool consisted in adding items regarding peer review, aim and research questions, information about the interventions, study design, control group, and follow up. Also, the measure used for the scale was changed, in order to make the range of quality (high, medium high, medium low, and low) easier. The original tool used a scale of 1, 0, and -1 points, a Not Applicable (NA) option was also available; while in the adapted tool a scale of 2, 1, and 0 points was used, and NA was not added to the scale. The points were used to measure the information included in the articles. The final version of the adapted tool had a total of 17 items which were divided into four main themes: (1) the article publication and background, containing information on peer review, aim and research questions; (2) the method, which includes information about the interventions, study design, control group, follow-up, population, randomized selection of participants, sample size, and response and attrition rate; (3) the measurement, concerning the main variables and concepts, and the operationalization of concepts; and (4) the analysis, encompassing numeric tables, missing data, appropriateness of statistical techniques, omitted variable bias, and analysis of main effect variables.

The results from the quality assessment can be found in Appendix D. They showed that seven studies had a medium low quality, while two showed a medium high quality. The low quality of the studies was mostly due to lack of research questions, scarce information about the interventions, the type of study design used to measure change of attitudes, the lack of a control group and a follow-up test, the selection of the participants, the sample size, the operationalization of concepts, and the lack of statistical information in the results (e.g. missing data, effect size). Due to the limited number of articles selected for data analysis, no articles were excluded after the quality assessment.

### 2.2.4 Peer review

For validation purposes a peer review process was done with another researcher who screened randomly selected studies at title and abstract, and full text level. The second researcher scanned around 170 articles of the 708 articles selected for title and abstract screening. Of these, fifteen were reviewed again and ten were excluded after revising inclusion and exclusion criteria together. The other five articles were included for full text review, of which two articles were later included for data analysis. Further, two included articles and two excluded articles at full text level were randomly selected and reviewed by the second researcher. The protocol (inclusion/exclusion criteria, full text, extraction and quality assessment) was filled in by the second researcher. There was a 100% agreement in which articles to include and which to exclude. Additionally, of the two articles included, minor discrepancies were found between researchers regarding the information put into the protocol. These were mostly because the second researcher had difficulties understanding what information to put in certain parts of the protocol (e.g. factors influencing

the change in attitudes). The protocol was then corrected in order to make it easier for another researcher to use for data extraction.

### **2.3 Data extraction**

The data was extracted and analyzed using a protocol (see Appendix E, at the extraction section of the protocol), which included information about the interventions, the attitude change and the factors influencing the attitudes. It also included overall information of the population, measure scales, method, and statistical analysis. For the interventions different information was gathered. It contained sections on what type of intervention it was, where was the setting of the intervention, if the intervention had an aim, how many days or hours it comprised, if it was mandatory or elective, if it was face-to-face or online, what the curricular content of the intervention was about, if there were any special assignments given to the pre-service teachers, and if it included any sort of field work experiences. Also, for the attitude change information on the type of measure scale used to measure the change of attitudes, the time points used, and if there was a change or not in pre-service teachers attitudes towards inclusion, was gathered.

Further, information on factors influencing the change of attitudes was divided into previous demographic factors and intervention factors. Previous demographic factors refer to influences from previous experiences or personal characteristics such as: level of qualification, previous training and teaching, prior contact with people with disabilities, age, and gender. Intervention factors refer to influences from the intervention itself such as: interaction with people with disabilities, self-efficacy or confidence, and knowledge. Moreover, the results and conclusions were specified as well as if there was an effect size measured for the change in attitudes and if statistical analysis was used or not for analyzing the data.

The protocol was filled in an excel sheet containing 75 columns and 26 lines. The excel sheet with all the information from the studies can be provided by the author on demand. Further, the information was compared and the studies were analyzed to answer the research questions of this literature review.

## **3 Results**

A total of 1,045 studies were found in the databases ERIC, Academic Search Elite, Science Direct and PsycINFO. Further, 708 studies were screened at title and abstract level, of which 63 were included for full text review. Finally, nine studies (Beacham & Rouse, 2012; Forlin & Chambers, 2011; Forlin, Loreman, Sharma, & Earle, 2009; Killoran, Woronko, & Zaretsky, 2014; Lambe, 2007; Oswald & Swart, 2011; Sharma, Forlin, & Loreman, 2008; Sharma, 2012; Stella, Forlin, & Lan, 2007) were selected for data extraction and analysis. Detailed information on the studies can be found in Appendix F. These studies were published between 2007 and 2014, in journals related to Inclusion, Special Education, Disability, Education, and Teacher Education.

Table 3.1

*Identification numbers (INI) of interventions related to the country of implementation and the reviewed study where they were presented*

INI	Country	Reviewed study	INS
1	Scotland	Beacham and Rouse (2012)	I
2	Australia	Forlin and Chambers (2011)	II
3A	Australia	Sharma et al. (2008) and Forlin et al. (2009)	III and IV
4A	Australia	Sharma et al. (2008) and Forlin et al. (2009)	III and IV
5C	Canada	Sharma et al. (2008) and Forlin et al. (2009)	III and IV
6H	Hong Kong	Sharma et al. (2008) and Forlin et al. (2009)	III and IV
7S	Singapore	Sharma et al. (2008) and Forlin et al. (2009)	III and IV
8	Australia	Sharma (2012)	V
9	Canada	Killoran et al. (2014)	VI
10	South Africa	Oswald and Swart (2011)	VII
11	Hong Kong	Stella et al. (2007)	VIII
12	Northern Ireland	Lambe (2007)	IX

*Note.* INI = Identification number of the intervention; INS = Identification number of the study

The nine included studies took place in seven countries: Australia, Canada, Hong Kong, Scotland, Singapore, South Africa, and North Ireland (see Table 3.1). Two studies (Forlin et al., 2009; Sharma et al., 2008) were conducted in four different countries: Australia, Canada, Hong Kong and Singapore (see Table 3.1). They used the same data, but presented different types of analysis and partly different interventions. All studies focused on general education pre-service teachers undergoing undergraduate or postgraduate education.

### 3.1 Interventions for affecting attitudes

In total there were 12 interventions presented in the reviewed studies. While reporting results related to the interventions the Identification Number of the Interventions (INI) (Table 3.1) will be used when referring to the 12 different interventions.

#### 3.1.1 Type of interventions

The interventions consisted mostly of a study unit on inclusion during pre-service teacher education (2, 6H, 7S, 8, 9, 10, 11) (see Table 3.2). Some were focused on a study unit on special education (3A, 4A, 8). Further, imparting knowledge of inclusion in a professional studies course was used in one intervention (1). Also, in another intervention (5C) an infusion approach was used, meaning that the content about inclusion was given within different study units throughout a two-year program. This approach was

likewise used in another intervention (12) on a one-year program, along with students' placements in one inclusive school and one non-inclusive school. The study units, programs and placements were either mandatory (1, 3A, 5C, 6H, 7S, 7, 8, 9) or elective (2, 4A, 5, 6).

Table 3.2

*Type of intervention presented in the reviewed studies*

Type of intervention	Intervention (INI)											
	1	2	3A	4A	5C	6H	7S	8	9	10	11	12
Study unit on inclusion		X				X	X	X	X	X	X	
Study unit on special education			X	X				X				
Professional studies course	X											
Infusion approach					X							X
Placement in inclusive school												X
Placement in non-inclusive school												X

*Note.* INI = Identification number of interventions, see Table 3.1.

### 3.1.2 Content of the interventions

The studies had hardly any information regarding the content and implementation of the interventions. From the information gathered, the interventions that focused on study units or programs had different curricular content, were taught with different teaching methods, and had a range of placements in schools and extra activities.

The curricular content (see Table 3.3) was mostly on teaching strategies (4A, 6H, 7S, 8, 9, 10, 11), disabilities and special educational needs (2, 3A, 4A, 7S, 8, 9, 10) and inclusion (2, 4A, 7S, 8, 9, 10, 11). The curricula was also focused on teaching pre-service teachers about the social model of disability (3A, 4A, 6H, 8, 9), on how to identify and assess difficulties (4A, 5C, 7S, 10), on classroom organization and management (4A, 5C, 7S), and on legislation and policies (2, 4A, 8). Two interventions focused on exclusion (7S, 9), co-working (9, 10), assessing and monitoring children's learning (3A, 4A), addressing barriers of inclusion (4A, 8), and integration and mainstreaming (8, 9). One intervention focused on addressing

diversity (10), international trends (3A), and special education (11). Two studies (Beacham & Rouse, 2012; Lambe, 2007) didn't have information about the curricular content of their programs.

Table 3.3  
*Curricular content of the interventions*

Curricular content	Interventions (INI)											
	1	2	3A	4A	5C	6H	7S	8	9	10	11	12
Teaching strategies				X		X	X	X	X	X	X	
Disabilities and Special Educational Needs		X	X	X			X	X	X	X		
Diversity											X	
Classroom organization and management				X	X		X					
Identification and assessing differences				X	X		X				X	
Legislation and policies		X		X				X				
Exclusion							X		X			
Co-working									X	X		
International trends			X									
Social model of disability			X	X		X		X	X			
Assessing and monitoring children's learning			X	X								
Inclusion		X		X			X	X	X	X	X	
Addressing barriers of inclusion				X				X				
Integration and mainstreaming								X	X			
Special Education												X

*Note.* INI = Identification number of interventions, see Table 3.1.

Table 3.4  
*Teaching methods used in the interventions*

Teaching methods	Interventions (INI)											
	1	2	3A	4A	5C	6H	7S	8	9	10	11	12
Problem-based learning		X				X						
Group work		X	X	X		X		X				
Workshops		X										
Lectures		X	X	X		X	X		X			
Case studies				X				X	X			

*Note.* INI = Identification number of interventions, see Table 3.1.

The teaching methods used in the interventions (see Table 3.4) consisted mostly of lectures (2, 3A, 4A, 5C, 6H, 7S, 9), group work (2, 3A, 4A, 6H, 8), case studies (4A, 8, 9), problem-based learning (2, 6H), and workshops (2). A range of extra activities (see Table 3.5) was also included in all but one (5C) of the interventions. Such as field work experiences that included contact with people with disabilities (2, 3A, 6H, 11), a lecture with parents of children with disabilities (4A, 6H, 8), a lecture with teachers of children with disabilities (6H), a visit to an inclusive school (8), a visit to a special school (7S), and the location and critique of inclusive programs within the community (2). One intervention (12), focused on the pre-service teachers placements in an inclusive school during one semester and a non-inclusive school during the second semester of the program. During three interventions (2, 9, 10) the students were doing their placements in different schools; nevertheless the schools where the placements took place were not selected, and the placement was not regulated.

Table 3.5

*Extra activities and placements in schools*

Activities and placements	Interventions (INI)											
	1	2	3A	4A	5C	6H	7S	8	9	10	11	12
Lectures with parents of children with disabilities				X		X		X				
Lectures with teachers of children with disabilities						X						
Contact with people with disabilities		X	X			X					X	
Visit to inclusive school								X				
Visit to special school							X					
Locate and critique inclusive programs within the local community		X										
Placement in inclusive school												X
Placement in non-inclusive school												X
Non-regulated placement in a school	X								X	X		

*Note.* INI = Identification number of interventions, see Table 3.1.

### 3.2 Change in attitudes

The scales used to measure the change in attitudes towards inclusion were the Sentiments, Attitudes and Concerns about Inclusive Education (SACIE) ( $n = 3$ ); the Attitudes Towards Inclusive Education Scale (ATIES) ( $n = 3$ ), the Opinions Related to Mainstreaming Adapted (OMR-A) ( $n = 1$ ); a survey designed by Lambe and Bones (2003, cited in Lambe, 2007) ( $n = 1$ ); and one unidentified instrument (see Appendix F). Only the results related to the change of attitudes towards inclusion reported in the studies are described in this study.

Table 3.6  
*Statistical results on positive change in attitudes towards inclusion after the interventions*

	Interventions (INI)											
	1	2	3A	4A	5C	6H	7S	8	9	10	11	12
Change in attitudes												
Positive change in attitudes			X	X	X	X		X	X	X	X	X
Significance of positive change												
Significant ( $p < 0.05$ )											X	
Significant ( $p < 0.01$ )					X			X		X		
Significant ( $p < 0.001$ )			X	X		X			X			
No significance was found		X					X					
No statistical analysis done	X											X
Effect size from positive change												
Effect size large			X	X		X						
Effect size moderate					X							
Effect size small												
No effect size measured	X							X	X	X	X	X

*Note.* INI = Identification number of interventions, see Table 3.1.

A positive change of attitudes was reported after nine of the interventions (3A, 4A, 5C, 6H, 8, 9, 10, 11, 12) (see Table 3.6). Positive change refers to an increase of attitudes towards inclusion, it does not necessarily mean that the attitudes of the pre-service teachers are completely positive towards inclusion; it only means that they increased in a positive way. Of the interventions that reported a positive change, eight stated a significant change (3A, 4A, 5C, 6H, 8, 9, 10, 11), while two didn't find any significant changes (2, 7S). No statistical analysis was done for two of the interventions (1, 12). Three of the interventions (4A, 5A & 6H) reported a large effect size, and one (5C) reported a moderate effect size. The effect size of the interventions was not measured in six of them (1, 8, 9, 10, 11, 12). While no statistical analysis was reported on the change in attitudes of the sample of one intervention (1), a statistical analysis was done to see if there were any significant differences between the sample and a group of students who took part in

an extra study unit on inclusion. The results showed no significant differences in attitudes towards inclusion between the two groups. In one intervention (12), despite the lack of statistical analysis, a difference in attitudes was reported through percentages between the two placements the students had during their studies. An increase of positive attitudes towards inclusion was found after the first placement, which took place in an inclusive school. Nevertheless, the positive attitudes seemed to be lower after the second placement, which took place in a non-inclusive school.

### 3.3 Factors influencing change in attitudes

While reporting results related to the factors influencing the change in attitudes, the Identification Number of the Study (INS) (Table 3.1) will be used. This is due to the combination of data of the interventions in studies III and IV, making it impossible to report the factors according to the Identification Number of the Interventions (INI) as previously done.

Table 3.7  
*Factors influencing change of attitudes in relation to inclusion*

Influencing factors	Reviewed study (INS)								
	I	II	III <sup>a</sup>	IV <sup>a</sup>	V	VI	VII	VIII	IX
Having an undergraduate degree				X					
Male students				X					
Female students							X		
Self-efficacy or confidence		X							
Interaction with people with disabilities		X							
Previous training and teaching							X		
Knowledge received from the intervention		X					X		

*Note.* INS = Identification number of study, see Table 3.1.

<sup>a</sup>Data from the interventions in studies III and IV was combined for this analysis by the researchers of the studies and reported only in study IV.

Only three studies (II, IV, VII) reported the factors that influenced a change in attitudes (see Table 3.7). The prominent factor that influenced a positive change in attitudes was the knowledge received from the intervention (II, VII). Further, conflictive results were found in how gender influenced the

change of attitudes. On the one hand, one study (VII) reported that female students were more prone to have positive attitudes towards inclusion; on the other hand, another study (IV) stated that male students were more prone to have positive attitudes. Other factors influencing a positive change in attitudes were having an undergraduate degree (IV), having previous training and/or teaching experience (VII), and having self-efficacy or confidence towards teaching in an inclusive classroom (II). In contrast with factors influencing attitudes positively, one study (II) mentioned that pre-service teachers that had interaction with people with disabilities during the intervention, compared to those who didn't, showed a lack of gain in positive attitudes towards inclusion after the intervention.

## **4 Discussion**

This study aimed to review literature in order to examine interventions that affected the attitudes towards inclusion of mainstream pre-service teachers. Results indicate that a study unit on inclusion during pre-service education is most commonly used as the intervention to affect attitudes towards inclusion. Other interventions such as a study unit on special education, a placement in an inclusive school and a non-inclusive school, and giving knowledge of inclusion throughout a program of one or two years, are also used. Different curricular content is taught during the study units or programs, teaching strategies, disabilities and SEN, and inclusion being the most common topics. Lectures and group works are mostly used as teaching methods, and some interventions included fieldwork experiences and extra activities that aimed to provide pre-service teachers with contact with people with disabilities or their family members. Nine of the twelve interventions showed a positive change in attitudes towards inclusion.

### **4.1 Reflections on findings related to other research**

The interventions analyzed in this study were mostly given through a study unit, sometimes not even mandatory. This makes inclusion, as Forlin (2010) mentions, something special and different, instead of it being included throughout the overall curricula of a program. The fact that almost half of the study units on inclusion or special education were elective in pre-service teacher education raises concerns. Considering that teacher education is key for furthering inclusive practices in regular schools (Engelbrecht, 2013; UNESCO, 1994), it seems as though it is a mere election for teachers to develop inclusive mindsets. It is not surprising that teachers feel unprepared when dealing with inclusive settings and are asking for more training (Avramidis & Norwich, 2002; Forlin, 2010; Scruggs & Mastropieri, 1996). Nonetheless, in trying to not only prepare pre-service teachers, but also create more positive attitudes towards inclusion, the interventions presented in this study indirectly aim towards the promising view of equality inclusion gives. Since inclusion, even if it's a complex and controversial concept, still plays an important role in making equality a reality in today's world (Mitchell, 2014; UNESCO, 1994).

The curricular content of pre-service teacher education was more focused on practical information (e.g. teaching strategies) and not so much on developing critical thinking. Information on what is

being taught to pre-service teachers and what should be taught to pre-service teachers when it comes to inclusion is scarce. Still, Rouse (2010) and Slee (2010) mention different issues that pre-service teacher education should focus on, such as exclusion; co-work between professionals, parents and peers; critical thinking towards the curriculum and pedagogy; and identification of barriers as well as how to overcome them. But it seems as though the curricular content of pre-service teacher education on inclusion is not focusing so much on these issues. Only two interventions (7S, 9) had exclusion in their content, co-working was also only mentioned in two interventions (9, 10), as well as addressing barriers of inclusion (4A, 8). This shows that there is still a lot to do regarding what is being taught to teachers. The curriculum of teacher education should be more inclined towards understanding exclusion, the barriers that make inclusion hard to achieve, the faults in the core of the curriculum, and the importance of working between professionals, as well as with the parents and the community where the school is set. That is, if teachers are to understand inclusion as a right and as a broader concept that not only focus on the school, but rather on all aspects of the community (family, culture, policies) (Tjernberg & Mattson, 2014; UNESCO, 1994).

While analyzing the interventions, it seemed as though the interventions were more focused on teaching pre-service teachers how to integrate children with disabilities and/or SEN in the classroom, rather than helping them develop an inclusive mindset where meeting the needs of all children is the focus of their profession. A question should be raised as to why most of the interventions in this study focus on giving knowledge and experience to pre-service teachers on how to include children with disabilities and/or SEN into the mainstream classroom. Even though inclusion is highly related to exclusion, disability and SEN (Acedo et al., 2009; UNESCO, 1994), its most important focus is rather on all children and how to reduce the barriers that prevent all children from learning and participating in their environment (Booth et al., 2009; Bornman & Rose, 2010; Farrell & Ainscow, 2002; Tjernberg & Mattson, 2014; UNESCO, 1994, 2005). When the aim of teacher education is towards developing an inclusive mindset, it makes it easier to think of all children and not only on those that need special support.

Despite the content of the interventions not being either fully stated in the studies and more focused on the concept of integration rather than inclusion, nine (3A, 4A, 5C, 6H, 8, 9, 10, 11, 12) of the twelve interventions showed a positive change in attitudes towards inclusion in the end. But, given the fact that the concept of inclusion might not have been well operationalized into the scales used to measure the change, it can be stated that the attitude change was more towards integration. Still, a change in attitudes towards inclusion (or integration) during pre-service education is a first step towards inclusion, taking into account that attitudes can influence our behavior and our thoughts (Albarracín et al., 2008; Maio & Haddock, 2010). And more specifically, they can influence teacher's critical approach towards pedagogy, their teaching methods, and the promotion of inclusive practices (Forlin, 2010; Rouse, 2010; UNESCO, 2005). Nevertheless, attitudes are difficult to measure, and it's still difficult to know how a change in atti-

tudes might develop over time and if the change will be constant (Crano & Prislin, 2008; Favazza et al., 2000; Maio & Haddock, 2010).

The difficulty in both understanding attitudes and measuring them can determine how we approach the change in attitudes reported in the studies. While some research has stated that teachers have positive attitudes towards inclusion (Galović et al., 2014), other have stated that teachers are not entirely positive towards inclusion (Avramidis & Norwich, 2002; Galović et al., 2014), and some have even come to conclusions on how teachers might have positive attitudes towards the concept of inclusion but not towards including students with severe disabilities (Avramidis & Norwich, 2002; UNESCO, 2005). Considering the difficulty in measuring attitudes and the fact that previous research on teacher's attitudes towards inclusion is mostly contradictory, not only could the attitude change reported in the studies be influenced by other environmental factors during the intervention, but they could also be prone to further change. Since none of the studies did a follow-up test, it is impossible to determine whether or not the attitudes towards inclusion remained positive. Nevertheless, one study (Lambe, 2007) did report a decrease of attitudes after the students had a placement in a non-inclusive school, compared to their previous placement in an inclusive school.

In this literature review only three studies mentioned the factors that influenced the change in attitudes towards inclusion (Forlin & Chambers, 2011; Forlin et al., 2009; Oswald & Swart, 2011). Of these one study (Oswald & Swart, 2011) found previous training to be a factor, another (Forlin et al., 2009) stated that having an undergraduate degree influenced the change in attitudes, and a third one (Forlin & Chambers, 2011) related previous teaching experience with children with disabilities or SEN with the change in attitudes. Previous research on demographic factors affecting pre-service and in-service teachers attitudes is also scarce and tends to be contradictory. While experience with students who have SEN or are viewed as "challenging" has been thought to influence attitudes by some, others find no correlation between them (Avramidis & Norwich, 2002; UNESCO, 2005). Furthermore, some studies have shown that females are more prone to show positive attitudes towards inclusion, while others state that males show more favorable attitudes, and some has shown no correlation between them (Avramidis & Norwich, 2002; Garriott et al., 2003; Muwana & Ostrosky, 2014; Varcoe & Boyle, 2014). This contradiction can be reinforced with this study since one intervention(Oswald & Swart, 2011) noted that females were more prone to positive attitudes towards inclusion and another intervention (Forlin et al., 2009) mentioned the contrary. In addition, some research has stated that high self-efficacy or confidence levels help teachers have more positive attitudes towards inclusion (Avramidis et al., 2000; Sharma et al., 2012). Both self-efficacy and confidence can be promoted by increasing knowledge (Loreman et al., 2013; Tschannen-Moran & Hoy, 2001; Varcoe & Boyle, 2014). This is confirmed by one intervention (Forlin & Chambers, 2011) that found self-efficacy/confidence and knowledge received from the intervention, as factors influencing a positive change in attitudes towards inclusion.

Additionally, the quality of the studies is of concern. Almost all of the reviewed studies, except for two, showed a medium low quality. An important factor to consider when it comes to the quality of research that aims to measure a change after an intervention, is the design of the study. Gross and Watkins (2014) mention that a Randomized Control Trial (RCT) is the optimal design when it comes to cause-and-effect testing. All of the reviewed studies had a One-Group Pretest-Posttest Quasi-Experimental Design, which is not the optimal design. Nevertheless sometimes it's not possible to follow the restrictions of a RCT (Gross & Watkins, 2014). Also, while analyzing the data only three articles reported the effect sizes of the change in attitudes. Considering that effect sizes are mostly essential when interpreting the results of a study (Ellis, 2010), this lowers the quality of the studies significantly.

## **4.2 Methodological issues and limitations**

The use of different databases can be challenging. All databases have a different search procedure and therefore different search words are needed in each one of them. Also, understanding how the search procedure of each database worked can sometimes be complicated. Even so, the specific search done in each database might have increased the number of articles found related to the aim of this study. Furthermore, a review of literature is more reliable when there is more than one researcher involved. Only one researcher did this literature review. In order to increase the reliability to this study, a peer-review process was done in the abstract, full text and extraction level of the studies. This ensured a maximum inclusion of articles related to the aim of this literature review. Also, the quality assessment could have increased the reliability of this study. Nevertheless, no studies were excluded because of the quality.

## **4.3 Future research**

While analyzing the selected articles, a lack of information regarding the content of the interventions was prominent. When doing cause-effect research, it is not only important to thoroughly explain what the intervention was, but also analyze those factors that could have influenced the change. Nevertheless, these were scarce in the reviewed articles. Therefore, it is suggested that when research is done in the matter of attitude change of pre-service teachers towards inclusion, a more detailed explanation of what the intervention was as well as how it influenced the change is recommended. This way, it will be easier to know what mainstream pre-service teachers need to learn during their education to improve their attitudes towards inclusion. Moreover, the scales used to measure the change in attitudes might lack concordance with the concept of inclusion itself. A review of the scales in order to know if the measure is accurate with the concept of inclusion is also suggested for further research.

Also, only a few of the reviewed articles addressed the bias that exists when measuring attitudes. While the change of attitudes could have been influenced by many other factors, the researchers did not address this issue. An improvement in measuring change in attitudes for the future could be not only to address the issue, but also use a more restrictive research design. The use of a control group, as well as a

follow-up test are two options that could improve the quality of studies that aim to measure a change in attitudes. It will also make research more reliable.

This literature review focused on three things: the interventions used in research to affect mainstream pre-service teachers attitudes towards inclusion, how those attitudes changed and what factors influenced the change. While these are important things to focus on, some of the studies also measured the concerns pre-service teachers had towards inclusion. Furthering this literature review and looking into what concerns pre-service teachers might give a more fair perspective of pre-service teachers attitudes towards inclusion.

## 5 Conclusion

The aim of this study was to examine interventions that affect the attitudes towards inclusion among mainstream pre-service teachers. The results show that actions are being taken throughout pre-service teacher education to positively affect their attitudes towards inclusion. And as society strives for inclusion through democratic processes and educational reforms, there is a promising view from the results of this literature review. The analyzed studies focused more on helping pre-service teachers feel more prepared and more positive about integrating children with disabilities or SEN into their classrooms. Nevertheless, when viewed from a time perspective, focusing on integration is far better compared to the more excluding society from some decades ago. The road towards inclusion has proven to be rocky and curvy, but this study shows that actions are continually being taken towards it.

Inclusion is difficult to operationalize and it is more difficult to measure attitudes towards it. Attitudes alone are difficult to measure. There is no conclusive evidence from this literature review that the positive change in attitudes that pre-service teachers had from the interventions will persevere. In fact, even if pre-service teachers attitudes towards inclusion might be positively influenced after a placement in an inclusive school, they can be negatively influenced after a further placement in a non-inclusive school. Reaffirming that a positive change of attitudes towards inclusion in pre-service teachers can be achieved, but might not be sustained.

Moreover, the scarce information given about the interventions might lead towards misinterpretation of what can positively or negatively influence pre-service teachers attitudes towards inclusion. Beyond a study unit on inclusion or a placement in a school, there is still no evidence that can state what curricular content is needed for developing positive attitudes towards inclusion among mainstream pre-service teachers. Even more so, there is no evidence in to what can sustain these positive attitudes after an intervention. All and all, it is evident that developing inclusive attitudes in pre-service teachers is a challenge and some things can be improved during teacher education to help create a more inclusive school environment.

## References

- Acedo, C., Ferrer, F., & Pàmies, J. (2009). Inclusive education: Open debates and the road ahead. *PROSPECTS*, 39(3), 227–238. <http://doi.org/10.1007/s11125-009-9129-7>
- Adair, B., Ullenhag, A., Keen, D., Granlund, M., & Imms, C. (2015). The effect of interventions aimed at improving participation outcomes for children with disabilities: a systematic review. *Developmental Medicine & Child Neurology*, 57(12), 1093–1104. <http://doi.org/10.1111/dmcn.12809>
- Ainscow, M. (2007). Taking an inclusive turn. *Journal of Research in Special Educational Needs*, 7(1), 3–7. <http://doi.org/10.1111/j.1471-3802.2007.00075.x>
- Albarracín, D., Wang, W., Li, H., & Noguchi, K. (2008). Structure of Attitudes: Judgments, Memory, and Implications for Change. In W. D. Crano & R. Prislin (Eds.), *Attitudes and Attitude Change* (pp. 19–39). New York: Psychology Press.
- Avramidis, E., Bayliss, P., & Burden, R. (2000). Student teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school. *Teaching and Teacher Education*, 16(3), 277–293. [http://doi.org/10.1016/S0742-051X\(99\)00062-1](http://doi.org/10.1016/S0742-051X(99)00062-1)
- Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration / inclusion: a review of the literature. *European Journal of Special Needs Education*, 17(2), 129–147. <http://doi.org/10.1080/08856250210129056>
- Beacham, N., & Rouse, M. (2012). Student teachers' attitudes and beliefs about inclusion and inclusive practice. *Journal of Research in Special Educational Needs*, 12(1), 3–11. <http://doi.org/10.1111/j.1471-3802.2010.01194.x>
- Booth, T., Nes, K., & Strømstad, M. (2009). *Developing inclusive teacher education*. Oxon: Routledge.
- Bornman, J., & Rose, J. (2010). *Believe that all can achieve. Increasing classroom participation in learners with special support needs*. Pretoria: Van Shaik.
- CCEERC. (2013). Quantitative Research Assessment Tool. Retrieved from <http://www.researchconnections.org/content/childcare/understand/research-quality.html>
- Crano, W. D., & Prislin, R. (2008). *Attitudes and Attitude Change*. New York: Psychology Press.
- Donnelly, V., & Watkins, A. (2011). Teacher education for inclusion in Europe. *PROSPECTS*, 41(3), 341–353. <http://doi.org/10.1007/s11125-011-9199-1>
- Ellis, P. (2010). *The Essential Guide to Effect Sizes*. Cambridge: Cambridge University Press.

- Engelbrecht, P. (2013). Teacher education for inclusion, international perspectives. *European Journal of Special Needs Education, 28*(2), 115–118. <http://doi.org/10.1080/08856257.2013.778110>
- Falkmer, M., Granlund, M., Nilholm, C., & Falkmer, T. (2012). From my perspective – Perceived participation in mainstream schools in students with autism spectrum conditions. *Developmental Neurorehabilitation, 15*(3), 191–201. <http://doi.org/10.3109/17518423.2012.671382>
- Falkmer, M., Oehlers, K., & Granlund, M. (2013). Can you see it too? Observed and self-rated participation in mainstream schools in students with and without autism spectrum disorders, *8423*, 1–10. <http://doi.org/10.3109/17518423.2013.850751>
- Farrell, P., & Ainscow, M. (2002). *Making Special Education Inclusive*. Oxon: David Fulton Publishers.
- Favazza, P., Phillipsen, L., & Kumar, P. (2000). Measuring and promoting acceptance of young children with disabilities. *Ambulatory Child Health, 6*(4), 287–287. <http://doi.org/10.1046/j.1467-0658.2000.00093-14.x>
- Forlin, C. (2010). Reframing teacher education for inclusion. In *Teacher education for inclusion. Changing paradigms and innovative approaches* (pp. 3–12). New York: Routledge.
- Forlin, C., & Chambers, D. (2011). Teacher preparation for inclusive education: increasing knowledge but raising concerns. *Asia-Pacific Journal of Teacher Education, 39*(1), 17–32. <http://doi.org/10.1080/1359866X.2010.540850>
- Forlin, C., Loreman, T., Sharma, U., & Earle, C. (2009). Demographic differences in changing pre-service teachers' attitudes, sentiments and concerns about inclusive education. *International Journal of Inclusive Education, 13*(2), 195–209. <http://doi.org/10.1080/13603110701365356>
- Galović, D., Brojčin, B., & Glumbić, N. (2014). The attitudes of teachers towards inclusive education in Vojvodina. *International Journal of Inclusive Education, 18*(12), 1262–1282. <http://doi.org/10.1080/13603116.2014.886307>
- Garriott, P. P., Miller, M., & Snyder, L. (2003). Preservice Teachers' Beliefs about Inclusive Education: What Should Teacher Educators Know? *Action in Teacher Education, 25*(1), 48–54. <http://doi.org/10.1080/01626620.2003.10463292>
- Gross, L., & Watkins, M. (2014). *Foundations of Clinical Research: Applications in Practice* (Third edit). Edinburgh: Pearson Education Limited.
- Hwang, A., Granlund, M., Liao, H.-F., & Kang, L.-J. (2013). Measures of “ Participation ” in School Children with Disabilities. *FJPT, 38*(1), 37–49.

- Jesson, J. K., Matheson, L., & Lacey, F. M. (2013). *Doing your literature review: Traditional and Systematic Techniques*. London: SAGE Publications, Inc.
- Killoran, I., Woronko, D., & Zaretsky, H. (2014). Exploring preservice teachers' attitudes towards inclusion. *International Journal of Inclusive Education*, 18(4), 427–442. <http://doi.org/10.1080/13603116.2013.784367>
- Lambe, J. (2007). Northern Ireland Student Teachers' changing attitudes towards inclusive education during initial teacher training. *International Journal of Special Education*, 22(1), 59 – 71.
- Lambe, J., & Bones, R. (2008). RESEARCH SECTION: The impact of a special school placement on student teacher beliefs about inclusive education in Northern Ireland. *British Journal of Special Education*, 35(2), 108–116. <http://doi.org/10.1111/j.1467-8578.2008.00381.x>
- Loreman, T., Sharma, U., & Forlin, C. (2013). Do Pre-service Teachers Feel Ready to Teach in Inclusive Classrooms? A Four Country Study of Teaching Self-efficacy. *Australian Journal of Teacher Education*, 38(1), 27–44. <http://doi.org/10.14221/ajte.2013v38n1.10>
- Maio, G. R., & Haddock, G. (2010). *The Psychology of Attitudes and Attitude Change*. London: SAGE Publications, Inc.
- Mavergames, C. (2013). Covidence (Systematic Review Software).
- Mitchell, D. (2014). What really works in special and inclusive education. In *Using evidence-based teaching strategies* (2nd ed., pp. 1–17; 298–315). New York: Routledge.
- Muwana, F. C., & Ostrosky, M. M. (2014). Factors related to pre-service teachers' attitudes towards inclusion: a case for Zambia. *International Journal of Inclusive Education*, 18(8), 763–782. <http://doi.org/10.1080/13603116.2013.835877>
- Olson, M. A., & Kendrick, R. V. (2008). Origins of Attitudes. In W. D. Crano & R. Prislin (Eds.), *Attitudes and Attitude Change* (pp. 111–130). New York: Psychology Press.
- Oswald, M., & Swart, E. (2011). Addressing South African Pre-service Teachers' Sentiments, Attitudes and Concerns Regarding Inclusive Education. *International Journal of Disability, Development and Education*, 58(4), 389–403. <http://doi.org/10.1080/1034912X.2011.626665>
- Reindal, S. M. (2016). Discussing inclusive education: an inquiry into different interpretations and a search for ethical aspects of inclusion using the capabilities approach. *European Journal of Special Needs Education*, 31(1), 1–12. <http://doi.org/10.1080/08856257.2015.1087123>
- Rouse, M. (2010). Reforming initial teacher education. In C. Forlin (Ed.), *Teacher education for inclusion*.

- Changing paradigms and innovative approaches* (pp. 47–55). New York: Routledge.
- Scruggs, T. E., & Mastropieri, M. A. (1996). Teacher perceptions of mainstreaming/inclusion, 1958-1995: A search synthesis. *Exceptional Childre*, *63*, 59–74.
- Sharma, U. (2012). Changing Pre-Service Teachers' Beliefs to Teach in Inclusive Classrooms in Victoria, Australia. *Australian Journal of Teacher Education*, *37*(10), 53–66. <http://doi.org/10.14221/ajte.2012v37n10.6>
- Sharma, U., Forlin, C., & Loreman, T. (2008). Impact of training on pre-service teachers' attitudes and concerns about inclusive education and sentiments about persons with disabilities. *Disability & Society*, *23*(7), 773–785. <http://doi.org/10.1080/09687590802469271>
- Sharma, U., Loreman, T., & Forlin, C. (2012). Measuring teacher efficacy to implement inclusive practices. *Journal of Research in Special Educational Needs*, *12*(1), 12–21. <http://doi.org/10.1111/j.1471-3802.2011.01200.x>
- Slee, R. (2010). Political economy, inclusive education and teacher education. In C. Forlin (Ed.), *Teacher education for inclusion. Changing paradigms and innovative approaches* (pp. 13 – 22). New York: Routledge.
- Stella, C. S. C., Forlin, C., & Lan, A. M. (2007). The Influence of an Inclusive Education Course on Attitude Change of Pre-service Secondary Teachers in Hong Kong. *Asia-Pacific Journal of Teacher Education*, *35*(2), 161–179. <http://doi.org/10.1080/13598660701268585>
- Tjernberg, C., & Mattson, E. H. (2014). Inclusion in practice: a matter of school culture. *European Journal of Special Needs Education*, *29*(2), 247–256. <http://doi.org/10.1080/08856257.2014.891336>
- Tschannen-Moran, M., & Hoy, A. W. (2001). Teacher efficacy: capturing an elusive construct. *Teaching and Teacher Education*, *17*(7), 783–805. [http://doi.org/10.1016/S0742-051X\(01\)00036-1](http://doi.org/10.1016/S0742-051X(01)00036-1)
- UNESCO. (1994). *The Salamanca Statement and Framework for Action on Special Needs Education*. Retrieved from <http://www.ecdgroup.com/download/gn1ssfai.pdf>
- UNESCO. (2005). *Guidelines for Inclusion: Ensuring Access to Education for All* (UNESCO). Paris. Retrieved from <http://unesdoc.unesco.org/images/0014/001402/140224e.pdf>
- UNESCO. (2015). Incheon Declaration: Education 2030. Korea: UNESCO. Retrieved from <http://unesdoc.unesco.org/images/0023/002338/233813M.pdf>
- Varcoe, L., & Boyle, C. (2014). Pre-service primary teachers' attitudes towards inclusive education. *Educational Psychology*, *34*(3), 323–337. <http://doi.org/10.1080/01443410.2013.785061>
- Vislie, L. (2003). From integration to inclusion: focusing global trends and changes in the western

European societies. *European Journal of Special Needs Education*, 18(1), 17–35.  
<http://doi.org/10.1080/0885625082000042294>

## Appendix

Appendix A. Flowchart showing the search procedure

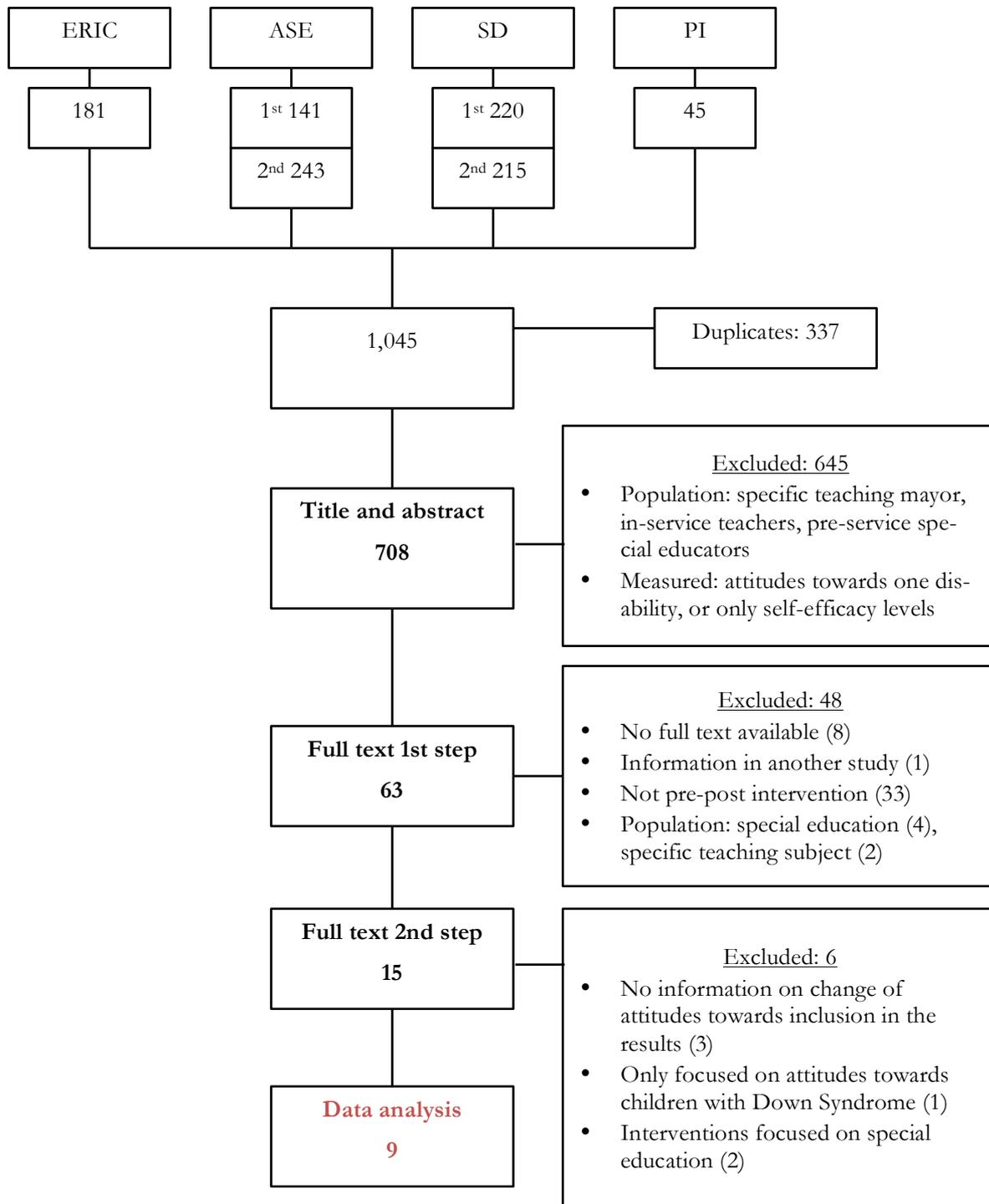


Figure 1. Search procedure flowchart. ASE = Academic Search Elite; SD = Science Direct; PI = PsycINFO. The numbers represent the number of articles found in the databases and then included or excluded at title and abstract level, full text level, and data analysis level.

*Appendix B. Table displaying the search words used in each database during the search procedure*

Databases	Search words		
	Pre-service teacher education	Attitudes	Inclusion
ERIC	- Teacher education programs	- Teacher Attitudes	- Inclusion
	- Preservice teacher education	- Attitudes	
	- Preservice Teachers	- Student Teacher	
	- Teacher Education	Attitudes	
	- Teacher Education Curriculum	- Attitudes toward	
	- Education Courses	Disabilities	
	- Teacher Characteristics		
	- Knowledge Base for Teaching		
	- Teacher Qualifications		
	- Student Teachers		
- Teacher Centers			
ASE1	- Teacher education	- Attitudes	- Inclusion
	- Student teacher	- Attitudes	- Inclusion*
ASE2	- Preservice teacher	- Perceptions	
	- Teacher education		
SD1	- Teacher education	- Attitude	- Inclusion*
	- Preservice teacher education	- Perception	
	- NOT inservice teacher		
	- NOT preschool		
	- NOT secondary		
	- NOT high school		
SD2	- Teacher education	- Attitude	- Inclusion*
	- Preservice teacher education	- Perception	
	- NOT Inservice teacher		
PI	- Preservice Teachers	- Teacher Attitudes	- Mainstreaming
	- Teacher Education	- Attitudes	- Mainstreaming
		- Perception	(Educational)

*Note.* ASE1 = Academic Search Elite, first search; ASE2 = Academic Search Elite, second search; SD1 = Science Direct, first search; SD2 = Science Direct, second search; PI = PsycINFO.

*Appendix C. Quality assessment tool*

<b>Assessment tool used for determining the quality of the reviewed studies</b>
Article publication and background
<p>1. Peer review. Was the article published in a peer-reviewed journal?</p> <p>[ 1 ] Yes</p> <p>[ 0 ] No</p> <p>2. Aim and research question(s). Where the aim and research question(s) stated in the study?</p> <p>[ 2 ] Both the aim and research question(s) are stated clearly</p> <p>[ 1 ] The aim is stated clearly but there are no research question(s) stated in the article</p> <p>[ 0 ] There is no aim or research question(s) stated in the article.</p>
Method
<p>3. Information about the intervention. Did the article contain sufficient information about the intervention? If so, was that information stated clearly? Was it enough information to understand the intervention?</p> <p>[ 2 ] The information about the intervention was sufficient and clear.</p> <p>[ 1 ] The article contain some information about the intervention but it was not sufficient.</p> <p>[ 0 ] The article did not contain any information regarding the intervention.</p> <p>4. Study design. Was the study a randomized controlled trial (RCT)? Or was it a quasi-experimental design?</p> <p>[ 2 ] The study was a randomized controlled trial (RCT)</p> <p>[ 1 ] The study was a quasi-experimental design</p> <p>[ 0 ] No information was given about the design of the study</p> <p>5. Control group. Did the study have a control group?</p> <p>[ 1 ] Yes</p> <p>[ 0 ] No</p> <p>6. Follow-up. Did the study do a follow-up after the post test to see if there had been any changes since the intervention?</p> <p>[ 1 ] Yes</p> <p>[ 0 ] No</p> <p>7. Population. Does the population that was eligible to be selected for the study include the entire population of interest? Or, is the eligible population a selective subgroup of the population of interest? For example, are all the children in the nation eligible to be selected for the study (the entire population of interest)? Or, were only children in New York City eligible to be selected for the study (a selective subgroup)? Or, were only children in one-day care center in New York City eligible to be selected (a very selective subgroup)?</p>

- [ 2 ] Eligible population includes entire population of interest or a substantial portion of it
- [ 1 ] Population represents a limited, atypical, or selective subgroup of the population of interest
- [ 0 ] No description of the population

8. Randomized Selection of Participants. Were study participants randomly selected for the study? Or, did study participants volunteer (nonrandom)? Or, were they located through specific organizations (nonrandom) or through acquaintances of the researchers (nonrandom)?

- [ 2 ] Random selection
- [ 1 ] Nonrandom selection
- [ 0 ] No description of the sample selection procedure

9. Sample Size. How many participants were selected for the study? Does the sample include enough participants from key subgroups to accurately assess subgroup differences? This is best used in comparison to other studies.

- [ 2 ] Sample size larger than similar studies
- [ 1 ] Sample size the same as similar studies
- [ 0 ] Sample size smaller than similar study or sample size not given

10. Response and Attrition Rate. What proportion of the selected sample completed the study?

- [ 2 ] High response or participation rate (over 65% response rate, over 90% participated in follow-up studies)
- [ 1 ] Moderate to low response rate (response rates of less than 65%)
- [ 0 ] No information on response rate or participation rate

#### Measurement

11. Main Variables or Concepts. Are each of the main variables or concepts of interest described fully? Can the main variables or concepts be matched to the variables in the tables?

- [ 2 ] Accurately described and can be matched
- [ 1 ] Vague definition or cannot be matched
- [ 0 ] No definition of main variables or concepts

12. Operationalization of Concepts. Did the authors choose variables that make sense as good measures of the main concepts in the study? Have these variables been used in previous studies or are they an improvement over previous studies?

- [ 2 ] Key concepts are measured with variables that make sense. Or, variables have either been previously used in research or are improvements over previous measures.
- [ 1 ] Key concepts are measured with variables that do not make sense, and variables have not been used in previous research studies
- [ 0 ] Variable operationalization is not discussed

Analysis
<p>13. Numeric Tables. Are the means and standard deviations/standard errors for all the numeric variables presented?</p> <p>[ 2 ] Means and standard deviations/standard errors presented</p> <p>[ 1 ] Means, but no standard deviations/standard errors presented</p> <p>[ 0 ] Neither means nor standard deviations/standard errors presented</p> <p>14. Missing Data. Is the number of cases with missing data specified? Is the statistical procedure(s) for handling missing data described?</p> <p>[ 2 ] Number of cases with missing data are specified and the strategy for handling missing data is described</p> <p>[ 1 ] Number of cases with missing data specified, but these cases are removed from the analysis</p> <p>[ 0 ] Missing data issues not discussed</p> <p>15. Appropriateness of Statistical Techniques. Does the study describe the statistical technique used? Does the study explain why the statistical technique was chosen? Does the study include caveats about the conclusions that are based on the statistical technique?</p> <p>[ 2 ] Statistical techniques, reasons for choosing technique, and caveats are fully explained</p> <p>[ 1 ] Statistical technique is explained, but the reasons for choosing technique or the caveats are not included.</p> <p>[ 0 ] Statistical technique, reasons for choosing technique, and caveats are not explained.</p> <p>16. Omitted Variable Bias. Could the results of the study be due to alternative explanations that are not addressed in the study?</p> <p>[ 2 ] All important explanations are included in the analysis</p> <p>[ 1 ] Important explanations are omitted from the analysis</p> <p>[ 0 ] Variables and concepts included in the analysis are not described in sufficient detail to determine whether key alternative explanations have been omitted</p> <p>17. Analysis of Main Effect Variables. Are coefficients for the main effect variables in the statistical models presented? Are the standard errors of these coefficients presented? Are significance levels or the results of statistical tests presented?</p> <p>[ 2 ] Model coefficients and standard errors or hypothesis tests for the main effects variables are presented</p> <p>[ 1 ] Either model coefficients or hypothesis tests for the main effects variables are presented</p> <p>[ 0 ] Neither estimated coefficients or standard errors for the main effects variables are presented</p>
<i>Note.</i> Adapted from the Quantitative Research Assessment Tool (CCEERC, 2013)

*Appendix D. Table displaying quality assessment scores of the reviewed studies according to the quality assessment tool*

	Reviewed study (INS)								
	I	II	III	IV	V	VI	VII	VIII	IX
<u>Assessment of quality</u>									
High (24 to 31 points)									
Medium High (16 to 23 points)		X	X						
Medium Low (8 to 15 points)	X			X	X	X	X	X	X
Low (0 to 7 points)									
<u>Reasons</u>									
<u>Article publication and background</u>									
1. Peer reviewed	1	1	1	1	1	1	1	1	1
2. Aim and research questions	2	1	1	1	2	1	1	1	1
<u>Method</u>									
3. Information about the interventions	1	1	1	0	1	1	1	1	1
4. Study design	1	1	1	1	1	1	1	1	1
5. Control group	0	0	0	0	0	0	0	0	0
6. Follow-up	0	0	0	0	0	0	0	0	1
7. Population	1	1	1	1	1	1	1	1	1
8. Randomized selection of participants	0	0	1	1	1	0	0	1	0
9. Sample size	2	1	2	2	0	1	1	1	1
10. Response and attrition rate	1	0	0	0	0	1	0	2	2
<u>Measurement</u>									
11. Main variables and concepts	1	1	1	1	1	1	1	1	1
12. Operationalization of concepts	0	0	2	0	0	0	0	0	0

Analysis

13. Numeric tables	0	2	2	2	2	0	2	2	0
14. Missing data	0	1	0	0	0	0	0	0	0
15. Appropriateness of statistical techniques	1	2	2	2	2	0	1	1	2
16. Omitted variable bias	1	2	1	1	1	2	2	1	0
17. Analysis of main effect variables	0	2	2	2	0	0	0	0	0
Total points	12	16	18	15	13	10	12	13	12

*Note.* INS = Identification number of studies, see Table 3.1. The quality assessment tool can be found in Appendix C.

*Appendix E. Protocol used throughout the selection process and the data analysis*

<b>Protocol used for selection process and data analysis</b>		
General information	Title of the study:	
	Authors:	
	Journal and year of publication:	
	Country or countries where the study took place:	
	Aim:	
	Research questions:	
Inclusion/Exclusion criteria	Include if marked “Yes” to all of the following:	Exclude if marked “Yes” to one or more of the following:
	Is the study focused on pre-service teachers? <input type="checkbox"/> Yes <input type="checkbox"/> No Are the pre-service teachers studying to be General education (mainstream) teachers? <input type="checkbox"/> Yes <input type="checkbox"/> No Are the attitudes measured in the study towards inclusion? <input type="checkbox"/> Yes <input type="checkbox"/> No Does the intervention consist of two or more measuring time points? (E.g. pre-post, pre-post-follow up, etc.) <input type="checkbox"/> Yes <input type="checkbox"/> No Was the study peer-reviewed? <input type="checkbox"/> Yes <input type="checkbox"/> No	Is the population studying only one specific mayor? (E.g. population of 30 pre-service teachers studying to become art teachers) <input type="checkbox"/> Yes <input type="checkbox"/> No Is all of the population or part of if pre-service teachers studying to become special educators? <input type="checkbox"/> Yes <input type="checkbox"/> No Is all of the population or part of if in-service teachers who are not studying? <input type="checkbox"/> Yes <input type="checkbox"/> No Are the attitudes measured in the study towards one or several disabilities only? <input type="checkbox"/> Yes <input type="checkbox"/> No

Full text screening and data extraction	Population			
	Where was the setting of the study? (Country, state, university)	What were the pre-service teachers studying? (E.g. Undergraduate degree)	What were the pre-service teachers mayors? (E.g. Primary)	What year of study where they in when the intervention took place?
	What was the concept of inclusion that the study mostly focused in?			
	Description of the intervention			
	<ul style="list-style-type: none"> <li>• What was the intervention? (E.g. study unit on inclusion)</li>   <li>• Where did the intervention take place?</li>   <li>• Did the intervention have a specific aim apart from the general aim of the study? If so, what was it?</li>   <li>• How long did the intervention last? (days, hours, weeks, monts)</li>   <li>• Was the intervention (the course, study unit) mandatory or elective?  <input type="checkbox"/> Mandatory  <input type="checkbox"/> Elective</li>   <li>• Was the intervention (the course, study unit) face-to-face, online or both?  <input type="checkbox"/> Face-to-face  <input type="checkbox"/> Online  <input type="checkbox"/> Both</li>   <li>• What did it consist of? What was the curricular content of it? What knowledge was imparted to the pre-service teachers?</li> </ul>			

<ul style="list-style-type: none"> <li>• Were there any teaching methods mentioned in the study used during the intervention? If so, what were they?</li> <li>• Were there any special assignments mentioned that were given during the intervention? If so, what were they?</li> <li>• Did the intervention (the course, study unit) include any type of fieldwork experience? If so, what did it consist of?</li> </ul>		
Outcomes of the intervention		
What was the measure scale(s) used to measure the change in attitudes?	How many measure time points were there?	Did the study report a change of attitudes? <input type="checkbox"/> Yes <input type="checkbox"/> No
Did they study report any statistical analysis describing the factors that could have influenced the change in attitudes? <input type="checkbox"/> Yes <input type="checkbox"/> No  Mark with an "x" the following factors if they were mentioned in the study: <ul style="list-style-type: none"> <li><input type="checkbox"/> Level of qualification</li> <li><input type="checkbox"/> Previous training and teaching</li> <li><input type="checkbox"/> Age</li> <li><input type="checkbox"/> Prior contact with a person with disabilities</li> <li><input type="checkbox"/> Gender</li> <li><input type="checkbox"/> Interaction with people with disabilities during the intervention</li> <li><input type="checkbox"/> Having high self-efficacy and/or confidence</li> <li><input type="checkbox"/> The knowledge acquired during the intervention</li> </ul>		

	Describe the general results of the study, focus on those related to pre-service change of attitudes towards inclusion:		
	Describe the conclusions of the study:		
	Describe the recommendations, if applicable, of the study:		
Statistical analysis and quality assessment	Background		
	Was the aim stated clearly? ( ) Yes ( ) No	Did the study have research questions? ( ) Yes ( ) No Where they clearly stated? ( ) Yes ( ) No	Was the concept of inclusion well operationalized? (E.g. focused on including all children and teaching all children) ( ) Yes ( ) No
	Method		
	What was the research design of the study? ( ) Qualitative ( ) Quantitative ( ) Mixed methods	What was the design of the study?	
	Sample		
What was the size of the sample?	How was the sample chosen? (E.g. randomized)	Was there informed consent?	Did the study have a control group?

Instrument	
	<p>Did the study reference or gave a good explanation of the instrument used?  <input type="checkbox"/> Yes  <input type="checkbox"/> No</p> <p>Did the study report the reliability of the scale? If so, what was it?</p> <p>Was the instrument adapted? If so, what adaptations were made?</p> <p>Was the instrument piloted?  <input type="checkbox"/> Yes  <input type="checkbox"/> No</p>
Results	
	<p>Did the study describe the analysis method used? If so, what analysis method was used?</p> <p>Did the study describe the statistical analysis done? If so, what was it?</p> <p>Did the study report means and standard deviations?  <input type="checkbox"/> Yes  <input type="checkbox"/> No</p> <p>Did the study measure the effect size? If so, what was it?</p>
	<p>Did the study report any limitations or bias? If so, what were they?</p>

*Appendix F. Table displaying information about the studies of interventions for affecting mainstream pre-service teachers attitudes towards inclusion*

INS	Study	Purpose	Setting	PN	Intervention <sup>a</sup>	Scale used	Outcomes
I	Beacham and Rouse (2012)	“To explore student teachers beliefs and attitudes towards inclusive education and practices on a newly reformed professional graduate diploma in education (PGDE) course.” (p. 4)	School of Education at the University of Aberdeen, Scotland	216	Professional studies course (1)	Unidentified	Pre-service teachers’ attitudes and beliefs towards the principles of inclusive education remained positive throughout the course. No significant change was found after the intervention.
II	Forlin and Chambers (2011)	It “focuses on the use of applied experiences by offering an option to engage with people with disabilities during a course designed to prepare teachers for inclusion. The impact of training during ITE is measured through pre-service teachers’ reporting on their sentiments and attitudes towards inclusion and their concerns about it.” (p. 20)	University located in Western Australia	67	Study unit on inclusion (2)	SACIE	By the end of the intervention pre-service teachers held slightly more positive attitudes towards including all students. Contact with people with disabilities during the intervention was found to negatively affect the attitudes towards inclusion.

III	Sharma et al. (2008)	“To examine the effect of completing disability education (one unit or through infusion) in special education at five institutions located in Australia, Singapore, Hong Kong and Canada on pre-service teachers attitudes towards and concerns about implementing inclusive education and their sentiments about persons with disabilities.” (p. 775)	Two universities located in Australia (A1 & A2), one in Canada (C1), one in Hong Kong (H1) and one in Singapore (S1)	603	Study unit on special education (3A & 4A), knowledge of inclusion throughout the whole program (5C), and study unit on inclusion (6H & 7S)	ATIES	A significant change in attitudes towards inclusion was found in four of the five interventions. Of the interventions that showed a significant change, three had a large effect size and one had a moderate effect size. In relation to the aim this study, education (one unit of study or an infusion program) in special education increases positive attitudes towards inclusion in pre-service teachers.
IV	Forlin et al. (2009)	“Consideration is given to the effect of a range of demographic differences on changing pre-service teacher attitudes toward inclusion; sentiments towards people with a disability and in reducing their concerns about inclusion when involved in a focused unit of work.” (p. 195)	Two universities located in Australia, one in Canada, one in Hong Kong and one in Singapore	603	Study unit on special education (3A & 4A), knowledge of inclusion throughout the whole program (5C), and study unit on inclusion (6H & 7S)	ATIES	Having an undergraduate degree and currently studying a postgraduate program was found to be a factor that influences a change in attitudes towards inclusion. Also, males were found to have a more noticeable change in attitudes towards inclusion.

V	Sharma (2012)	“To determine the effect of participating in a 10-week course on pre-service teachers’ beliefs about teaching in inclusive classrooms.” (p. 60)	A university in Victoria, Australia	27	Study unit on both inclusion and special education (8)	SACIE	Participating in one study unit on special and inclusive education has a significant positive effect on pre-service teachers beliefs about inclusion.
VI	Killoran et al. (2014)	“To examine whether participation in Inclusive Education resulted in statistically significant attitudinal shifts among pre-service teacher candidates.” (p. 430)	Faculty of Education at York University, located in Toronto, Canada	81	Study unit on inclusion given to four groups of students (9)	ORM-A	There was a significant change in attitudes towards inclusion at the end of the intervention in all four groups.
VII	Oswald and Swart (2011)	“To identify possible changes in the sentiments, attitudes and concerns towards inclusive education of the pre-service teachers.” (p. 389)	A higher education institution in South Africa	180	Study unit on inclusion (10)	SACIE	There was a significant change in attitudes towards inclusion after the intervention. Also, it was found that increasing knowledge helped develop positive attitudes towards inclusion in pre-service teachers that had average knowledge before the intervention. Moreover, females were found to develop more positive attitudes.

VIII	Stella et al. (2007)	“To examine the adequacy of an inclusive education module on the attitude change of pre-service teachers in Hong Kong.” (p. 161)	A teacher preparation institution in Hong Kong	151	Study unit on inclusion (11)	ATIES	A significant difference in pre-service teachers’ attitudes towards inclusive education was found.
IX	Lambe (2007)	“To identify the key factors and experiences that can influence attitude change towards inclusion during pre-service training.” (p. 63)	University of Ulster, located in Northern Ireland	108	Knowledge of inclusion throughout the whole program, plus a placement in an inclusive school and a placement in a non-inclusive school (12)	Survey designed by Lambe and Bones	After the placement in an inclusive school pre-service teachers seemed increasingly positive about teaching in a more inclusive setting, while on completion of the placement in a non-inclusive school their attitudes appeared to have been more negatively affected.

---

*Note.* INS = Identification number of study; PN = Population number; SACIE = Sentiments, Attitudes and Concerns about Inclusive Education; ATIES = Attitudes Towards Inclusive Education Scale; ORM-A = Opinions Related to Mainstreaming Adapted.

<sup>a</sup>The identification number of the intervention (INI) is reported in parenthesis.