Effect of In-service Training on Teachers’ Attitudes Towards Inclusion
A Systematic Literature Review

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ABSTRACT

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Main title: Effect of In-service Training on Teachers’ Attitudes Towards Inclusion

Subtitle: A Systematic Literature Review

Background: Inclusive education can be of great benefit to the development of children and students with special education needs. Nonetheless, regular in-service teachers across several grade levels express their concerns over managing and educating students in need of special supports who are included in classrooms along with their peers. Inclusion-focused training has been suggested as a way to promote teachers’ positive attitudes towards the education of students with different abilities. Thus, this systematic literature review attempted to investigate the effect of in-service training on in-service teachers’ attitudes towards inclusion.

Method: The search was carried out through electronic databases including ERIC, PsycINFO, Web of Science, and Google Scholar limited to studies published between 1990 and 2020. The quality assessment process was conducted utilizing CASP checklist for randomized control trials.

Results: In total, 12 studies were found eligible to include in data synthesis. The quality assessment showed that most studies were of moderate quality concerning study design and generalizability of results. Nine studies reported that in-service training programs had an effect on teachers’ attitudes towards inclusion.

Conclusion: This study provides an overview of the effect of in-service training on regular classroom teachers’ attitudes across grade-levels. Although the teachers’ attitudes towards inclusion appear to be changed during the intervention process, long-term effects also need to be assessed. The study indicates that system-level supports and resources in the form of in-service training are beneficial for promoting inclusive attitudes among regular classroom teachers.

Keywords: Teachers’ attitude, inclusion, inclusive education, in-service training, systematic review
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1 Introduction

The inclusion movement in education has been commenced over the past decades, particularly since holding the World Conference on Special Needs Education: Access and Quality in 1994 (The United Nations Educational, Scientific and Cultural Organization [UNESCO], 2009). Following article 23 of the United Nations Convention on the Rights of the Child (UNCRC), children with disabilities should be integrated into an educational context promoting full social inclusion (UNCRC, 1989). The need for the inclusion of children with special needs was mainly focused on the Salamanca declaration (1994) to optimize equal education for all children. According to the declaration, all children with special educational needs should be welcomed and included in regular educational settings and benefit from a high-quality education. In this regard, education systems are responsible for the provision of supportive services involving in-service training to teachers so that they can meet the special educational needs of students within the inclusive context. These aims were reaffirmed at the World Education Forum held in Dakar (2000), and the emphasis was placed on the importance of inclusion of children with special education needs and the equal education opportunities for all children to nurture and learn in a safe environment. This particular emphasis on inclusion issue is as a result of a revolutionary movement towards equal opportunity for all children in education following the global declarations, e.g., the World Declaration on Education for All (1990), Salamanca (1994), paid great attention to the equal right of education for all learners.
2 Background

2.1 Inclusion Concept

The concept of inclusion has gained particular attention over the past decades, which has resulted in tremendous changes and profound insight into the conceptualization (Odom, Buysse & Soukakou, 2011; Love & Horn, 2019). From integration to mainstreaming, the inclusion term has been accepted to describe an environment where both typical children and those in need of special supports can developmentally and educationally benefit (Odom et al., 2004). The new conceptualization of inclusion was established around the 1990s when the terms of integration and mainstreaming were replaced with a more comprehensive notion of inclusion (Odom et al., 2011).

In early childhood contexts, the concept of inclusion was extended to a broader domain, that is, physical attendance of children with special needs in the regular classrooms would not be considered as the whole practice (Odom et al., 2011). According to the joint statement of the Division for Early Childhood (DEC) and the National Association for the Education of Young Children (NAEYC), other fundamental factors including the provision of learning opportunities, participation, and receiving supports at the system-level along with physical placement should also be taken into account. Specifically, inclusion has been defined as: ‘a sense of belonging and membership, positive social relationships and friendships, and development and learning to reach their full potential’ (DEC & NAEYC, 2009, p. 2).

To maximize the potential of children and their families in an inclusive environment, provision of programs and services which enhance the sense of belonging and promote optimal participation as well as social integration are crucial (DEC & NAEYC, 2009; Odom et al., 2011; Love & Horn, 2019). The following features are described for a high-quality inclusion:

- Promoting accessibility to diverse opportunities and settings which can optimize the learning of children,
- Providing programs and services in which participation of both children and their families can optimize within the society,
Additionally, the attendance, participation, and academic achievement of all learners, particularly those who are vulnerable to exclusion in the school, should be concerned within an inclusive environment (UNESCO, 2008).

All in all, inclusion is a process to ensure that all learners can benefit from quality education, and their participation can meaningfully enhance during the learning process. At the same time, social and educational exclusion are attempted to eliminate (UNESCO, 2009).

2.1.1 Advantages of Inclusive Environment

Inclusive programs have been shown to have beneficial effects on attendance, academic achievements, and development among students of grades three to eight with various special educational needs (Sakız, 2017). It is argued that despite some challenges within the inclusive environment, social skills, cognitive and academic development, as well as students’ learning outcomes, enhance the context of inclusive education. Students with disabilities take the opportunity to experience ‘living in a real-world society’ in an inclusive environment (Lai & Gill, 2019, p. 139). The advantages of inclusive education are not limited to the students in need of special supports, typically developing peers can also benefit from the inclusive environment that helps them to improve their awareness of other needs and be able to accept classmates with diverse conditions (Odom et al., 2004; Lai & Gill, 2019). According to the study by Ruijs, van deer Veen & Peetsma (2010), carried out on 27,745 students without special educational needs at primary grade level, the presence of students with special educational needs have not influenced linguistic and arithmetic achievement or socio-emotional functioning of the target group in an inclusive environment. Besides, there are also social, educational, and economic advantages related to inclusive education. Reinforcement of a non-discriminatory approach and attitude change towards diversity can be viewed as the social benefits of inclusion (UNESCO, 2009).

2.2 The Role of Teachers in Inclusive Practices

Teachers’ crucial role within the context of inclusion has been widely brought into focus (Op-eritti & Brady, 2011). Teachers’ efforts have been changed to concentrate on learners’ needs and the provision of further supports rather than their difficulties (Rouse, 2008).

The importance of teachers within the inclusive context is recognizable, noticing that they play a substantial role in class management; that is, they decide on what should be provided or modified based on students’ needs (Rouse, 2008). Florian (2008) asserted that teachers have
enormous capacities to adopt inclusive approaches with emphasis on the learning for all pupils within the classrooms, irrespective of school policies, and national curricula. Implementation of inclusion is associated with the fact that how prepared teachers are to confront a diverse context resulting in teachers’ perception of their inclusive tasks. Teachers’ willingness to include children in need of special supports can be not only a predictor of their efforts to enhance their knowledge but also a facilitator to inclusive practices (Florian, 2008; Piten-ten Cate, Markova, Krischler & Krolak-Schwerdt, 2018).

2.3 Teachers’ Attitudes

2.3.1 Teachers’ Perspective on Inclusion

Regular classroom teachers’ acceptance of and attitudes to inclusive education play a key role in students’ progress and success within the inclusive settings (Saloviita & Schaffus, 2016). Teachers are usually concerned over putting inclusive education into action due to some factors including lack of supportive guidance and resources (Spektor-Levy & Yifrach, 2019), insufficient knowledge of inclusive ideology (Yan & Deng, 2019), teaching methods and the fear for more extra works in inclusive classrooms (Saloviita & Schaffus, 2016).

Teachers’ attitudes towards inclusion have been well investigated by a wide range of studies (Avramidis & Norwich, 2002; Jerlinder, Danermark & Gill, 2010; de Boer, Pijl & Minnaert, 2011; Mieghem, Verschueren, Petry & Struyf, 2018; Bryant, 2018; Štemberger & Kiswarday, 2018; Saloviita, 2020). The findings of these studies were reported both negative and positive attitudes towards inclusion in teachers. A systematic review noted that teachers tend to show negative attitudes to the inclusion of children with special needs in the classrooms (Mieghem et al., 2018). Saloviita (2020) also found that most Finish teachers in primary school could not accept inclusion and had negative attitudes towards inclusive education.

Avramidis & Norwich (2002) shown that although teachers tend to have a positive approach to inclusion, this positive perspective can be changed when the implementation of inclusive education is the aim. In addition to these findings, the results of a literature review found negative attitudes towards inclusion among teachers in primary schools (de Boer, Pijl & Minnaert, 2011). A study in Hong Kong concluded that preschool teachers reported a modestly supportive approach to inclusive education (Lee, Yeung, Tracey & Barker, 2015). Moreover, a study by Jerlinder et al. (2010) showed that Swedish physical education teachers at primary school were in favor of the inclusion of students with disabilities.
In sum, teachers’ concerns were shown mainly associated with financial, physical, and human resources indicating that resource supports might have an impact on their confidence to teach students with special needs (Shah et al., 2016).

2.3.2 Factors Related to Teachers’ Attitudes

Adopting positive or negative attitudes towards the inclusion of children with diverse abilities might be affected by a variety of individual and environmental factors (Avramidis & Norwich, 2002; Saloviita, 2020). Regards the environmental factors, teachers’ beliefs can be affected by the education system and the extent to which a system is capable of supporting the teachers (Jordan, Schwartz & McGhie-Richmond, 2009). As a requirement of inclusion practice, there is a need for attitudinal changes within the society, particularly shifting attitudes of those who have a critical role in the development of children with special needs (UNESCO, 2009).

Saloviita (2020) reported that alongside with school educational resources, teachers’ demographic characteristics (e.g. gender and age), and attitudinal factors (child-centredness and self-efficacy) were associated with teachers’ positive attitudes. According to the review by Avramidis & Norwich (2002), factors such as teachers’ and children’s characteristics as well as environmental factors influenced the attitudes of teachers towards inclusion. Child-related factors that strongly affected teachers’ attitudes were type and severity of the disability. In contrast, factors related to teachers (e.g. gender, working years, grade level, the experience of working with children in need of special supports, pre- and in-service training, perspectives, and socio-political approach) were inconsistently related to teachers’ attitudes. In addition to the aforementioned factors, successful inclusive practices would be possible by preparing teachers for inclusive education.

Teaching the students with special learning needs were reported by lower secondary teachers as the foremost identified needs in professional development programs (Organization for Economic Cooperation and Development [OECD], 2009). In this regard, teachers’ needs should be taken into consideration as in some training programs, teachers’ attitudes have remained unchanged due to initial knowledge of some inclusive education issues. Results of the study by Kurniawati, De Boer, Minnaert, & Mangunsong (2017) reported no changes in the knowledge of teachers regarding dyslexia, owing to the focus of pre-service training curricula on language subjects. Teachers’ preparedness enhances through training programs, where they
can acquire and develop more skills concerning inclusive practices (Avramidis & Norwich, 2002).

2.4 In-service Training

In-service training is described as educational programs and activities aiming at the enhancement of teachers’ professional knowledge and skills. These training programs can also provide in-service teachers with the opportunities to familiarize with novel approaches and methods in their profession. On-going professional and technical development in the form of in-service training is an appropriate method to direct teachers (Osamwonyi, 2016).

The association between in-service training programs and teachers’ positive attitudes towards inclusion have been broadly proved (Avramidis & Norwich, 2002; Jerlinder et al., 2010; Štemberger & Kiswarday, 2018). More positive attitudes in Slovenian preschool teachers with no experience of working with students in need of supports were associated with participating in in-service training programs (Štemberger & Kiswarday, 2018). Similarly, taking part in pedagogical training concerning inclusive education was reported to be related to physical education teachers’ positive attitudes towards inclusion (Jerlinder et al., 2010).

One of the aspects that can affect supporting and implementing inclusive practices is the lack of preparedness to teach students with special education needs (Rouse, 2008; Piten-ten Cate et al., 2018). Teachers believe that insufficient knowledge and being unfamiliar with useful strategies applicable to the inclusive environment can lead them to feel uncomfortable (Crane Mitchell & Hedge, 2007).

As a part of inclusive practices, teachers should prepare to understand learners’ needs in terms of instructions and applying teaching methods based on pupils’ needs. Continuous training programs are a way of preparing in-service teachers for an inclusive environment (UNESCO, 2009). Adequate, proper training for teachers can facilitate adopting inclusive education in terms of managing the classrooms and recognizing individual differences of students (Forlin & Sin, 2017). Teachers’ empowerment is influenced by receiving supports at the society level (e.g. various stakeholders from the decision-makers to school community); thus, teachers certainly need assistance from policymakers of different levels (Watkins, De Vroey & Symeonidou, 2016). It is suggested that hands-on training and practicums help develop teachers’ abilities in adopting inclusive education (Crane Mitchell & Hedge, 2007). In-service training is a process of teachers’ continuous learning (European Agency, 2015), and one influential
factor to promote teachers’ positive attitudes towards inclusive education is being continuously trained (UNESCO, 2009).

Supporting teachers to be well trained with regards to an inclusive approach, provide them with adequate resources, and enhance their competence and skills can promote their capacities in adopting inclusive practices. Hence, policies at different levels play a fundamental role in improving teachers’ abilities to perceive the ideology of inclusion (Jerlinder et al., 2010).
3 Rationale for the Current Study

The pivotal role of in-service teachers in the efficient implementation of inclusive education is explicit and has been widely supported. Teachers can decide on various methods and strategies to bring equal learning opportunities to all learners and address the educational needs of students, regardless of their abilities. Adopting positive attitudes towards inclusive practices is of concern due to the influence of teachers’ interactions on the development of children. In-service training has suggested as an effective approach, which means promoting inclusive teachers’ positive attitudes towards inclusion and empower them to meet students’ educational needs within the classroom. In-service training programs have been broadly supported to provide teachers with profound insight into inclusive ideology and enhance teachers’ perception of their role within the inclusive setting. Therefore, the effects of in-service training on regular classroom teachers’ attitudes towards inclusion need to be examined.

The present review can provide a broad insight into a better understanding of the impact of in-service training on teachers’ attitudes towards inclusion in the special education field. The bioecological model will be applied to discuss on the system-level approach related to inclusive education. This model is considered as a useful conceptual framework to understand how the system-level approach can facilitate the improvement of teachers’ positive attitudes towards inclusive education. Thus, this review will enhance the current knowledge regarding the significance of in-service training on regular teacher’s attitudes towards inclusion.

3.1 Research Aim and Question

The current systematic literature review aims to investigate the effect of in-service training on regular teachers’ attitudes towards inclusion, independent of grade-level. This study attempted to answer the following question:

What effect can in-service training have on regular teachers’ attitudes towards inclusion within an inclusive environment?
4 Conceptual Framework

4.1 The Bioecological Model of Bronfenbrenner and Inclusion

Bronfenbrenner’s bioecological model suggested the nested systems that can influence a child’s development (Bronfenbrenner, 1979). According to this model, the child can be influenced by the surrounding environment as well as affect the environment. In this model, the child is placed in the central point of the model and is surrounded by various levels including micro-, meso-, exo-, macro-system. In a latter version, Bronfenbrenner introduced the dimension of time known as chronosystem, which explains any transitions and occurrences within the environment over the lifespan (Watts, Cockcroft & Duncan, 2009; Bronfenbrenner & Morris, 2006). The model is characterized by proximal processes indicating that the developmental outcomes can be affected by interactions between the child and other individuals, objects, and symbols in the immediate environment over time (Bronfenbrenner & Evans, 2000). Bronfenbrenner’s bioecological model has been considered as a useful model in the inclusive practices and can conceptualize a framework by which the relations between inclusive setting and children with special educational needs can be understood (Odom et al, 2004; Zhang, Chan & Boyle, 2014).

4.1.1 The Microsystem Level

This level consists of the most immediate settings surrounding the learner. Family, school setting, teachers, and peers can be viewed at this layer that child directly interacts with (Bronfenbrenner, 1976; Bronfenbrenner, 1979). The interactions which take place between the developing child and the members of social or educational settings in the immediate surrounding shape the proximal processes (Bronfenbrenner & Evans, 2000). Classroom’ activities are suggested as an essential mechanism in a micro-system level in inclusive practices. In this level, school staff, and above all, teachers’ roles, and their attitudes towards inclusive are prominent (Odom et al., 2004). The micro-system is viewed as a direct setting where learners can experience both formal and informal learning. Therefore, from an inclusive viewpoint, it consists of schools’ staff, teacher(s), peers, class routines, and resources (Zhang et al., 2014).

4.1.2 The Macro-system Level

Bronfenbrenner (1976) described the macrosystem as educational, social, political, and legal structures which can shape an ideology in the society. This level is characterized by the approach adopted by the systems to prioritize children, family, teachers, and key persons within
the learning process. Moreover, the social view on the teachers’ responsibilities regarding students’ participation might result in making relevant policies (Neal & Neal, 2013). In this regard, system-level supports need to focus on those professionals who play a significant role in implementation of inclusive practices. The supports can be provided in the form of professional development (DEC & NAEYC, 2009).

4.1.3 The Chronosystem Level
The chronosystem is defined as any transitions that can have an impact on the child’s experiences over time (Zhang et al., 2014). It is argued that the chronosystem can be examined concerning other systems, that is, attitude change over time and within the inclusive environment might occur. Furthermore, programs and longitudinal interventions related to inclusive education should be taken into account over time. This level is also characterized by the supports at community and society levels which can lead the inclusive programs to continue during the time (Odom et al., 2004).

This review will mainly focus on the micro, macrosystem, and chronosystem levels of the bioecological model as a conceptual framework. The teacher’s attitudes (microsystem factor) are presumably associated with the development of special educational needs students, and a supportive system to equip teachers with professional skills (macrosystem factor) deemed important for positive attitudes towards inclusion. Additionally, attitude change occurs over time and need various longitudinal assessments (chronosystem).
5 Methodology

This study is a systematic literature review in which relevant articles based on a determined search strategy have been retrieved. The review has been conducted according to the following phases (Higgins & Green, 2006; National Institute for Health and Care Excellence [NICE], 2012):

- Formulating the research question based on the PICO components
- Developing inclusion and exclusion criteria for the selection of studies
- Developing a search strategy and selecting relevant studies
- Quality assessment of eligible studies
- Extracting required data according to a predetermined extraction protocol
- Synthesis of the data and reporting results

5.1 The PICO Components

Key elements of PICO, population (P), intervention (I), comparison groups (C), and main outcomes (O), were considered to formulate the research question (Higgins & Green, 2006; NICE, 2012). To describe the PICO standards for the current review, population (P) is defined as regular schoolteachers with special educational needs’ students, Intervention (I) as in-service training focused on promoting teachers’ attitudes towards inclusion, comparison group (C) as those teachers who have not participated in training programs and, outcome (O) as any positive, negative or neutral changes in teachers’ attitudes towards inclusion after completing the intervention.

5.2 Inclusion and Exclusion Criteria

The inclusion and exclusion criteria were established to recognize the most relevant articles. These criteria were formulated by the studies’ participants, type of studies, type of interventions, and outcomes (Higgins & Green, 2006). Table 1 shows the inclusion and exclusion criteria.
Table 1. Inclusion and Exclusion Criteria

<table>
<thead>
<tr>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Studies targeted on the regular schoolteachers across grade levels who work with special educational needs students in an inclusive environment</td>
<td>▪ Studies targeted on the pre-service teachers or trainees</td>
</tr>
<tr>
<td><strong>Type of Studies</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Scholarly studies published in peer-reviewed journals</td>
<td>▪ Non-peer-reviewed journals’ articles</td>
</tr>
<tr>
<td>▪ Intervention studies</td>
<td>▪ Reviews, letters, reports, qualitative studies, conference papers, descriptive and mixed-method designs</td>
</tr>
<tr>
<td><strong>Interventions</strong></td>
<td></td>
</tr>
<tr>
<td>▪ In-service training or professional development programs</td>
<td>▪ Pre-service training or master’s programs or courses as the intervention</td>
</tr>
<tr>
<td><strong>Outcomes</strong></td>
<td></td>
</tr>
<tr>
<td>▪ Outcomes reported as effects of in-service training on teachers’ attitudes towards inclusion</td>
<td>▪ Outcomes related to components other than teachers’ attitudes (for instance, knowledge, competence, self-efficacy)</td>
</tr>
<tr>
<td>▪ Outcomes related to teachers’ attitude changes following the in-service training</td>
<td></td>
</tr>
<tr>
<td><strong>Time and language</strong></td>
<td></td>
</tr>
<tr>
<td>▪ English language studies</td>
<td>▪ Non-English language studies</td>
</tr>
<tr>
<td>▪ Studies published from 1990 to the end of January 2020</td>
<td>▪ Studies published out of 1990-2020-time span</td>
</tr>
</tbody>
</table>

5.3 Search Strategy and Databases

Three electronic databases, including ERIC, PsycINFO and, Web of Science, as well as the 150 first records of Google Scholar, were searched to retrieve relevant studies. Although it is suggested that searching the 200 first references in Google Scholar might be of benefit to identify grey literature (Bramer, Rethlefsen, Kleijnen & Franco, 2017), the current review focused on
the 150 first records due to time limitation. The search strategy was developed by a combination of the following key words ‘attitude change,’ ‘attitudes toward disabilities,’ ‘teachers’ attitudes,’ inclusion, mainstreaming, ‘in-service education’ and ‘in-service teacher education’ with Boolean operators and truncation (Jesson, Matheson & Lacey, 2011). The search strategy modified in two databases, including Web of Science and Google Scholar, using more synonyms to retrieve the most relevant studies (see Appendix A). Furthermore, limiters, including publishing date (from January 1990 to January 2020) and language (English), were applied to narrow the search based on inclusion criteria. This time limitation selected due to taking preliminary steps to inclusive education over the 1990s (Odom et al., 2004). Appendix A shows the total number of hits on each database after applying the limiters.

5.4 Screening Process

All retrieved studies were imported to the Zotero reference management software (Roy Rosenzweig Center for History and New Media, 2020). This software is useful to manage studies as well as finding the duplicates. A total number of 167 articles were imported to the software of which 10 were duplicates. As the following step, all articles were screened by Rayyan QCRI, which is known as a review management software to organize the review process (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016).

The screening process was conducted in two phases: 1) title and abstract phase, and 2) the full-text phase. In the first phase, the 157 remaining studies were examined in terms of title and abstract, and a protocol (Appendix B) was developed to recognize the eligibility of the studies at this phase. In this phase, the main purpose of the study, population, design, and main outcomes were considered. Moreover, the reference lists of eligible studies and other literature and scoping reviews were examined, and one study was identified thorough this supplementary process. A total number of 24 articles were deemed suitable. The second phase involved reading the full text of 24 studies. To decide whether a study was eligible to include in data synthesis, all articles were examined thoroughly based on inclusion and exclusion criteria. The screening process was finalized with excluding 12 studies due to not fulfilling all criteria. Ultimately, the total number of 12 studies were recognized as eligible papers for data synthesis. PRISMA flowchart (Moher, Liberati, Tetzlaff, Altman & the PRISMA Group, 2009) were used to illustrate the whole process of screening (see Figure 1).
**Figure 1. Screening Process**

Identified records (n = 167)

- ERIC (n = 60)
- PsycINFO (n = 9)
- Web of Science (n = 89)
- Google Scholar (n = 9)

Duplicated Records (n = 10)

Records after duplicates removed (n = 157)

- Records screened (n = 157)
- Records excluded (n = 134)

Full-text assessment for eligibility (n = 24)

- Reference Review (n = 1)

Exclude articles (n = 12)
- Wrong design (n= 4)
- Wrong outcome (n= 5)
- Reports (n= 2)
- Non-peer reviewed (n = 1)

Studies included in data synthesis (n = 12)
5.5 Quality Assessment

Quality assessment was conducted by using the Critical Appraisal Skills Programme (CASP) checklist for randomized controlled trial quantitative studies (CASP, 2019). This checklist consists of three key sections of preliminary screening focusing on how valid the results are, what results are found, and how locally relevant the results are. There is a total of 11 critical questions that can be answered as ‘Yes,’ ‘Can’t Tell,’ or ‘No’ (see Appendix C). No scoring system was suggested for the CASP checklist, nevertheless, the following scoring style was developed to facilitate the assessment process: point 1 = Yes, 0.5 = Can’t tell, and 0 = No. The maximum score was 11. Grades ≥ 8.5 were considered as high-quality, 6 - 8 as moderate-quality and ≤ 5.5 as low-quality studies. The results of the quality assessment have been provided as low-, moderate- and, high-quality studies. The quality assessment of studies demonstrated that two of the 11 studies (17%) were of high-quality, seven studies (58%) of moderate-quality, and three studies (25%) of low-quality. All studies irrespective of their quality included in data synthesis to extract required data. Table 2 provides information on the quality appraisal of included studies.

Table 2. Quality Appraisal of Included Studies

<table>
<thead>
<tr>
<th>INA*</th>
<th>Author (s)</th>
<th>Year</th>
<th>Quality of Study (Low, Moderate, High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carew, Deluca, Groce &amp; Kett</td>
<td>2019</td>
<td>Moderate</td>
</tr>
<tr>
<td>2</td>
<td>Haegele, Hodge, Filho &amp; de Rezende</td>
<td>2018</td>
<td>High</td>
</tr>
<tr>
<td>3</td>
<td>Kurniawati et al.</td>
<td>2017</td>
<td>Moderate</td>
</tr>
<tr>
<td>4</td>
<td>Sucuoğlu et al.</td>
<td>2015</td>
<td>Moderate</td>
</tr>
<tr>
<td>5</td>
<td>Srivastava, de Boer &amp; Pijl</td>
<td>2015</td>
<td>High</td>
</tr>
<tr>
<td>6</td>
<td>Seçer</td>
<td>2010</td>
<td>Low</td>
</tr>
<tr>
<td>7</td>
<td>Baker-Ericzén et al.</td>
<td>2009</td>
<td>Moderate</td>
</tr>
<tr>
<td>8</td>
<td>Sari</td>
<td>2007</td>
<td>Moderate</td>
</tr>
<tr>
<td>9</td>
<td>Wilkins &amp; Nietfeld</td>
<td>2004</td>
<td>Low</td>
</tr>
<tr>
<td>10</td>
<td>Lifshitz, Glaubman &amp; Issawi</td>
<td>2004</td>
<td>Moderate</td>
</tr>
<tr>
<td>11</td>
<td>Shechtman &amp; Or</td>
<td>1996</td>
<td>Moderate</td>
</tr>
<tr>
<td>12</td>
<td>Jarvis &amp; French</td>
<td>1990</td>
<td>Low</td>
</tr>
</tbody>
</table>

Note. The included studies were coded according to the identification number of articles (INA).

*INA: identification number of articles
5.6 Data Extraction

The extraction procedure was carried out according to a predetermined extraction protocol. The data considered in the extraction process involved general information of the study (bibliography, study aim, and research questions), design (sample size, sampling method, intervention process, data collection, data analysis, and ethical approval), and outcomes (the effect of interventions and effect size values) related to teachers’ attitudes towards inclusion. The three categories were divided into subcategories to obtain relevant data. Appendix D provides detailed information on the data extraction protocol utilized by the reviewer.

5.7 Data Synthesis

The synthesis process was carried out by the research question and the essential findings of the eligible studies. Only studies that met all inclusion criteria were included in data synthesis. All required data concerning attitudes’ measurement scales, in-service training characteristics, as well as outcomes after interventions were reported and provided in the form of a narrative table (NICE, 2012).

5.7.1 Estimation of Effect Size

The effect of in-service training on teacher’s attitudes was also presented based on the reported effect size values by the studies, e.g. partial eta squared ($\eta^2$) or Cohen’s $d$ values. Regarding those studies not presenting effect size values, the author performed estimations to the available values reported on the studies. The effect size values were reported as eta squared ($\eta^2$), which is a commonly used value to describe the magnitude of effect size in educational research (Richardson, 2011). The values were estimated through an online computation (Lenhard & Lenhard, 2016). In order to interpret effect size values calculated by the author, following eta squared benchmarks applied for this purpose: small = 0.01, medium = 0.06, and large = 0.14 (Maher, Markey & Ebert-May, 2013).

5.8 Ethical Considerations

Ethical issues in conducting the systematic literature review are of importance in terms of reporting the authors’ and participants’ views reflected on the primary studies (Zawacki-Richter et al., 2020). In parallel with the principles mentioned above, current review attempted to take the ethical considerations into account in conjunction with plagiarism and copyright principles, involving proper citations to the original works, citation to the diagram as well as avoiding the content similarity (Wager & Wiffen, 2011; Wager, 2014).
6 Results

In this section the identification number of articles (INA), as provided in table 2, applies to refer to the included studies. Table 3 provides an overview of the included studies. A total number of 12 studies fulfilled the inclusion criteria in terms of participants, study design and related outcomes. Of this number, three studies were conducted in Turkey (4, 6, 8), two studies in the United States (7, 9), two studies in Israel (10, 11), one study was in Brazil (2), one in Kenya (1), one in Indonesia (3), one study in India (5), and one study was in Canada (12). Regarding teachers’ role, seven studies were classroom teachers (1, 3, 5, 8, 9, 10, 11), three studies targeted on preschool teachers and early childhood providers who dealt with 3-6 years old children (4, 6, 7), and two studies focused on physical education teachers (2, 12). Three studies conducted the training on preschool grade and early childhood center (4, 6, 7), five studies targeted on primary school grade (3, 5, 8, 10, 12), one targeted at middle school (9) and one study focused on the second-grade level (12). Seven studies were designed as experimental and control groups (3, 5, 8, 9, 10, 11, 12), whereas other studies undertook the intervention without control groups (1, 2, 4, 6, 7). The majority of the reviewed studies assessed the teachers’ attitudes using self-report questionnaires (2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12). In contrast, one study undertook the assessment based on a standardized interview on a four-point scale, and the interviewer has entered the answers of the participants into the questionnaire (1).

6.1 In-service Training

Nine studies designed the in-service training programs in the form of short courses (1, 3, 4, 5, 6, 7, 8, 9, 11). Holding workshops were found in three reviewed studies (2, 10, 12). The whole training sessions were completed in either three to five days (1, 2, 5, 6, 7, 10, 12), months (3, 4, 8), or one to three academic years (9, 11). Training programs have been designed to provide teachers with a variety of subjects and inclusion-related content. Generally, training programs focused on subjects involving inclusion concept and inclusive education principles (1, 2, 3, 6, 7, 9, 10, 12), identification and understanding special education needs of students (1, 3, 4, 5, 6, 8, 10, 12), assessment of children (4, 6, 12), class management (1, 2, 4, 8), practical teaching strategies (2, 3, 4, 5, 6, 8, 10, 12), curriculum modification (3, 4, 6, 8, 9, 12), and attitude change and behavior management (6, 7, 9, 10, 11, 12). Two studies included a follow-up assessment of teachers’ attitudes four months (12) and six months (4) after the intervention.
Table 3. An Overview of Reviewed Studies

<table>
<thead>
<tr>
<th>INA</th>
<th>Country</th>
<th>Sample Size</th>
<th>In-service Training</th>
<th>Duration</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Kenya</td>
<td>123</td>
<td>Girls Education Challenge (GEC) program</td>
<td>Five days</td>
<td>Of three attitudes’ components, the intervention was effective on two components of beliefs and feelings, and ineffective on intentions.</td>
</tr>
<tr>
<td>(2)</td>
<td>Brazil</td>
<td>90</td>
<td>Professional development workshop</td>
<td>Two days</td>
<td>No significant changes were found between pre-test scores and post-test scores and the participants were undecided on inclusion issue.</td>
</tr>
<tr>
<td>(3)</td>
<td>Indonesia</td>
<td>67</td>
<td>Inclusive training program</td>
<td>Four days</td>
<td>Training affected subscale ‘Cognitive-affective.’ Subscale ‘behavioral’ was not significantly changed.</td>
</tr>
<tr>
<td>(4)</td>
<td>Turkey</td>
<td>30</td>
<td>Preschool Inclusion Program (PIP)</td>
<td>16 weeks</td>
<td>In-service training had a positive effect on teachers’ attitudes towards inclusion.</td>
</tr>
<tr>
<td>(5)</td>
<td>India</td>
<td>79</td>
<td>Inclusive training program</td>
<td>Four days</td>
<td>The intervention had a significant effect on teachers’ attitudes.</td>
</tr>
<tr>
<td>(6)</td>
<td>Turkey</td>
<td>66</td>
<td>In-service Teacher Training (IN-SET)</td>
<td>Five days</td>
<td>Three subscales, including ‘Advantages of Inclusion,’ ‘Competencies of the Handicapped Students and Advantages of Inclusion,’ and ‘the Negative Effects of Inclusion’ were significantly changed.</td>
</tr>
<tr>
<td>(7)</td>
<td>The U.S.</td>
<td>1,298</td>
<td>Modularized in-service training</td>
<td>Four sessions</td>
<td>Providers’ attitudes were positively improved, and the training had a significant impact on the attitudes of participants.</td>
</tr>
<tr>
<td>(8)</td>
<td>Turkey</td>
<td>122</td>
<td>In-service Teacher Training (IN-SET)</td>
<td>Eight weeks</td>
<td>Teachers’ attitudes towards the inclusion of deaf students have been changed following the intervention.</td>
</tr>
<tr>
<td>(9)</td>
<td>The U.S.</td>
<td>89</td>
<td>Winning Ideas Network for Schools (WINS)</td>
<td>Three years</td>
<td>There was no significant difference between experimental and control groups, and the intervention was not effective in the experimental group.</td>
</tr>
<tr>
<td>(10)</td>
<td>Israel</td>
<td>258</td>
<td>In-service training program</td>
<td>28 hours</td>
<td>The intervention affected regular teachers’ attitudes regarding inclusion.</td>
</tr>
<tr>
<td>(11)</td>
<td>Israel</td>
<td>68</td>
<td>‘Clarifying processes’ and 'bibliotherapy’</td>
<td>One academic year</td>
<td>Significant changes were found in three factors (‘effect on the mainstream child,’ ‘effect on classmate;’ and ‘teacher efficacy’) in experimental teachers’ beliefs towards mainstreaming.</td>
</tr>
<tr>
<td>(12)</td>
<td>Canada</td>
<td>28</td>
<td>In-service training program</td>
<td>Two days</td>
<td>Slight changes, but not significant, were found in teachers’ attitudes.</td>
</tr>
</tbody>
</table>
The number of participants over the follow-up procedure in one study has dropped off to half
due to the displacement of the teachers and maternity leave (4). One study reported a refresher
training session which was in line with the approach of on-going training (1).

6.2 Teacher’ Attitude Assessment Tools

The studies included in the current review utilized various self-report questionnaires to assess
the attitudes of the target group. Only one study (1) reported that the questionnaires were com-
pleted by the researcher after the in-service training program. The questionnaires used to assess
the attitudes of teachers were developed on a Likert rating scale. One study used three dimen-
sions, including beliefs, feelings, and intentions, to determine teachers’ attitudes (1). The three
dimensions of inclusion versus exclusion, acceptance of students with disabilities and perceived
training needs were the variables in the Physical Educators’ Judgements about Inclusion (PEJI)
instrument assessed the attitudes of physical education teachers (2). The cognitive-affective and
behavioral components of attitudes were the scales to evaluate teacher’s attitudes in one study
(3). Another scale that was applied to measure teachers’ attitudes was the Opinions Relative to
the Integration of Students with Disabilities (ORI) consisting of five factors utilized by three
studies (4, 6, 8). One study applied the Multidimensional Attitudes Toward Inclusive Education
Scale (MATIES) (5). The Regular Education Initiative Questionnaire was used by one included
study (10). One scale was reported as a combined questionnaire entitled Teacher Beliefs on
Mainstreaming Scale to measure teachers’ beliefs about the inclusion (11). One study used the
Learning Handicapped Integration Inventory scale for measuring the attitudes of physical edu-
cators (12). Other measurement tools were a 20-item (9) and an 8-item (7) questionnaires.

6.3 Effect of In-service Training on Teachers’ Attitudes

Most reviewed studies reported the effect size as partial eta squared, whereas one study esti-
ated the Cohen’s d value for the overall changes scores in teachers’ attitudes (7). The effect
size values were estimated for four studies (6, 8, 11, 12) by the author and reported as eta
squared value. The estimation was performed based on available values reported by the articles.
These values were t-test, Means (M), and Standard Deviations (SD) for pre-post scores and z-
value. There were three studies (8, 11, 12) that reported both significant and insignificant
changes, thus, the effect size was estimated for each subscale. The results of the reviewed stud-
ies showed that nine studies reported practical in-service training on teachers’ attitudes towards
inclusion. The small effect size was reported in four studies (1, 6, 11, 12), medium and medium
to large in six studies (3, 4, 5, 7, 10, 11), and large in two studies (1, 11). One study (8) reported significant changes in three factors related to teachers’ attitudes after the intervention, which effect size estimation showed no effect on teachers’ attitudes (8). Table 4 provides the effect size values and magnitude as small, medium, and large.

To sum up, the results of the current review found that in-service training and professional development programs were effective on regular teachers’ attitudes towards inclusion. Of 12 reviewed studies, three studies reported ineffective intervention (2, 8, 9), and the interventions in nine studies were found effective (1, 3, 4, 5, 6, 7, 10, 11, 12).

Table 9.3. Effect Sizes Magnitude in Reviewed Studies

<table>
<thead>
<tr>
<th>INA</th>
<th>t-test</th>
<th>z-value</th>
<th>Mean (M)</th>
<th>SD</th>
<th>Effect Size</th>
<th>Magnitude</th>
</tr>
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<tr>
<td></td>
<td></td>
<td></td>
<td>Pre</td>
<td>Post</td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>3.26</td>
<td>3.66</td>
<td>.67</td>
<td>.48</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2.77</td>
<td>3.28</td>
<td>.72</td>
<td>.73</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>2.84</td>
<td>3.24</td>
<td>.53</td>
<td>.33</td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>59.23</td>
<td>47.20</td>
<td>6.87</td>
<td>8.88</td>
</tr>
<tr>
<td>5</td>
<td>-</td>
<td>-</td>
<td>3.62</td>
<td>3.93</td>
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<td>.34</td>
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<tr>
<td>6*</td>
<td>2.496</td>
<td>-</td>
<td>57.72</td>
<td>55.43</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>7</td>
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<td>2.00</td>
<td>4.22</td>
<td>-</td>
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<td>8*</td>
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<td>-</td>
<td>23.43</td>
<td>24.1</td>
<td>4.87</td>
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<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
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<td>.43</td>
<td>3.10</td>
<td>3.00</td>
<td>.91</td>
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<tr>
<td></td>
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<td>.73</td>
<td>4.77</td>
<td>4.84</td>
<td>.84</td>
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<td></td>
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<td>3.79</td>
<td>4.28</td>
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<tr>
<td></td>
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<td></td>
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<td>12*</td>
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<td>45.1</td>
<td>48.2</td>
<td>10.2</td>
<td>9.4</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>43</td>
<td>47.8</td>
<td>7.4</td>
<td>14.9</td>
</tr>
</tbody>
</table>

*Effect size was estimated by the author of the current review
const be?
can facilitate the full participation and inclusion of all students within the inclusive classroom (UNESCO, 2017). Teachers’ attitudes affect their interactions with students with special educational needs and the way they manage the classroom (Odom et al., 2004). Those teachers taking negative attitudes towards inclusion might discourage to implement inclusive practices (Sharma, Forlin, Loreman & Earle, 2006). Teachers’ interactions with special educational needs children are considered at microsystem level which can directly influence the development of them (Bronfenbrenner, 1979). The quality of these interactions can be promoted by in-service training programs focusing on professional development (Egert, Fukkink & Eckhardt, 2018).

The results of the current review demonstrated that in-service training could positively affect teachers’ attitudes towards inclusive education. Teachers’ skills and attitudes along with appropriate infrastructure are major determinants that can promote or hinder the inclusive practices (UNESCO, 2017). Although teachers play a key role in performing effective inclusive practices, the role of national and regional policies to support teachers in the implementation of inclusive education should not be ignored (European Agency, 2012). Therefore, at the society level, the concerns should be shifted to provide a more supportive environment and policies for children and those are in their immediate surroundings (DEC & NAEYC, 2009).

Prioritizing the children and other significant individuals in their immediate environment at the macro-system level can affect the interactions between them and the way they hold favorable attitudes towards each other (Bronfenbrenner, 1976). Although teachers’ role in the implementation of inclusive education is undeniable, they need to be viewed as the component of a broader system (European Agency, 2012). Hence, this broad system should adopt a systematic approach through which not only the rights of all learners are of the main focus, but also providing the supports and resources is crucial to make inclusive education possible (European Agency, 2012). At the system level, one action that can be considered is developing ongoing professional development programs to promote teachers’ capacities (European Commission, 2015) as well as provide high-quality education in an inclusive environment (Odom et al., 2004). On-going in-service training can empower teachers to value all learners with diverse educational needs, respond to their needs, and support their achievement (UNESCO, 2017). For this purpose, the training should emphasize changing attitudes along with enhancing teachers’ skills and knowledge (WHO, 2011).
The whole system can affect the child’s developmental outcomes over time, which refers to the chronosystem level of Bronfenbrenner’s model. At chronosystem level, attitudes and perceptions related to inclusive programs at school over time influence the development of students with special educational needs. These attitudes can be taken by those individuals at the microsystem level, which can directly affect the students’ outcomes. One factor which can lead the inclusive programs to be maintained over time is holding positive attitudes towards inclusive education (Odom et al., 2004). Attitudinal shifts take place over time and need constant reassessment (UNESCO, 2009). The results of the present study showed that a majority of the included studies assessed teachers’ attitudes immediately after the intervention. Therefore, longitudinal reassessment of attitudes change was not considered by the included studies. Additionally, the continuation of inclusive programs take place following the changes at the organizational level over time (Odom et al., 2004). One key factor to the continuation of inclusive practices is providing regular classroom teachers with the constant professional development led teachers to hold more positive attitudes towards the inclusion, which need supports from the education system over time. Time can be considered as a crucial factor to implement the policies aiming at inclusive practices and direct the teachers into a right track through the longitudinal professional development process; in terms of both provision of equal education for all learners and holding positive attitudes towards inclusion (UNESCO, 2017).

Less challenging inclusive practices warrant further consideration on sufficient legal supports, adequate resource support, teachers’ on-going professional development, and training focusing on inclusive education. Successful implementation of equitable and inclusive education needs policies at the macro-system level through which required resources and the opportunities of continuous professional development for teachers are of concern (Loreman, Forlin & Sharma, 2014). Teachers’ willingness to support children with special needs are in association with their attitudes and concerns about inclusive education. One of the major concerns about the inclusion approach is insufficient infrastructural resources (Shah et al., 2016). Therefore, the efforts need to be made to support teachers to hold positive attitudes which can have a substantial impact on various aspects of children’s development (McConkey, 2001).

7.1 Methodological Issues

A systematic literature review is known as a scientific method to investigate and integrate a wide range of information. This methodology provides valuable information based on predetermined criteria and protocol, which consequently result in more reliable results. The results
of systematic reviews can minimize the risk of bias (Higgins & Green, 2006). Effect size values need to be considered in educational fields (Maher et al., 2013). The results of the current review showed medium to the large effect of in-service training on teachers’ attitudes. It appears interpretation of the impact of in-service training on attitudes of teachers should be made cautiously. It is worth noting that the effect size can be influenced by factors such as sampling method or sample size; that is, non-random sampling method or too small sample size can result in biased outcomes (Ferguson, 2009).

Moreover, the results of the current review showed that most included studies had been recruited small size samples, and some applied non-random sampling method. Thus, the study population may not be a representative of a greater population to generalizability of results that should be considered. Another point that needs to be addressed is that most included studies in the current review were developed the quasi-experimental single group design. This study design might be at risk of bias due to the lack of random assignment of groups (Privitera & Ahlgrim-Delzell, 2019). Considering all abovementioned points regarding included studies, inferences of the effects of in-service training should be drawn with caution.

7.2 Limitations of the Current Review

The present systematic literature review provided an outline related to what effect the in-service training can have on attitudes towards inclusion. However, some limitations in this systematic literature review need to be pointed out. The first limitation might be related to the small number of databases that have been searched. It would be more advantageous to examine a broader range of databases. Secondly, due to the time limits, there was no opportunity for a dual review approach in this study; therefore, the screening process and selection of studies might be affected by this factor. The dual review approach can reduce possible errors during the process of review, and more reliable results are likely to be reported (Higgins & Green, 2006). A final limitation is that both randomized and non-randomized studies have been assessed using one checklist (CASP), which might influence the quality assessment results; that is, those non-randomized studies might be considered as lower quality due to different design.

7.3 Future Studies

Most included studies in the current review were measured the teacher’s attitudes over the time planned for the interventions, not afterward. Only two studies were designed to measure whether changing teachers’ attitudes remained after completing the interventions (4, 12). The
current review demonstrated that teachers’ attitudes assessed before and immediately after in-service training in the form of post-test evaluation. There is still a huge gap in whether in-service training has long-lasting effects on teachers’ attitudes. Long-term follow-up is suggested to assess the effects of in-service training on regular teachers’ attitudes and future investigations can bridge this gap by longitudinal assessments. It is important to take note of both attitudinal as well as behavioral changes that can happen following the in-service training.

Given that the changes in attitudes are associated with behavior (Glasman & Albarracín, 2006), future research is encouraged to emphasize inclusive teachers’ behavior towards special educational needs students following the in-service training. Teachers might hold a positive attitude to include special educational needs students. However, they may encounter challenges to implement inclusive practices (Avramidis & Norwich, 2002). Therefore, in parallel with attitudes change, teachers’ behavioral factors need to be considered. Similar to the importance of assessing the attitude change over time, investigating teachers’ behavior in an inclusive environment through longitudinal assessments might provide a detailed picture of how they can support students with special needs and whether these changes can sustain over time.
8 Conclusion

This systematic literature review provides further insights into the effect of in-service training on regular schoolteachers’ attitudes towards inclusion across grade-levels. Most reviewed studies reported a medium-to-large impact following the interventions, whereas the in-service training in three of the studies reported ineffective. The effect of interventions should be interpreted cautiously due to the moderate quality of the included studies.

Attitude might be associated with behavior and actions (Maio, Haddock & Verplanken, 2019). Teachers’ positive attitude not only can shape their actions but also commit practical strategies in an inclusive environment (UNESCO, 2005). Attitude can resist or change over time (Maio et al., 2019). In-service training as an influential factor in attitude change in regular teachers prepares them to be able to meet the diverse educational needs of students in an inclusive context.

There is a connection between microsystem and macrosystem elements that can influence the development of children (Bronfenbrenner, 1979). Teachers as one of the proximal factors influencing the development of students, need to be supported at the macrosystem. That is, providing inclusive teachers with required professional development can promote their inclusive attitudes. In turn, those students with special educational needs can receive more supports and equal learning opportunities within the education setting (UNESCO, 2005). Additionally, a more positive attitude in teachers leads students with special needs to experience far less social exclusion (UNESCO, 2005). Considering the chronosystem, time is considered as a significant factor which affect the other systems in terms of holding positive attitudes towards inclusive education by in-service teachers, as well as the maintenance of inclusive programs (Odom et al., 2004).

The study indicates that system-level supports in the form of in-service training is a beneficial factor for promoting inclusive attitudes among regular teachers. The findings of the current review have the implications for education systems where planning for implementation of inclusive practices as well as providing equitable education for all learners irrespective of their differences are of concern and in priority.
9 References


Roy Rosenzweig Center for History and New Media. (2020). Zotero (Version 5.0.83): Roy Rosenzweig Center for History and New Media.


Sakız, H. (2017). Impact of an Inclusive Programme on Achievement, Attendance and Perceptions towards the School Climate and Social-emotional Adaptation among Students


Effects of the Preschool Inclusion Program on Teacher Outcomes in Turkey Journal of Early Childhood Teacher Education, 36(4), 324-341. doi:10.1080/10901027.2015.1105328


## 10 Apendices

### Appendix A- Search Process

<table>
<thead>
<tr>
<th>Database</th>
<th>Search Strategy</th>
<th>Number of Hits</th>
</tr>
</thead>
<tbody>
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<td><strong>ERIC</strong></td>
<td>((DE &quot;Attitude Change&quot; OR DE &quot;Attitudes toward Disabilities&quot; OR DE &quot;Teacher Attitudes&quot;) AND (DE &quot;Mainstreaming&quot; OR DE &quot;Inclusion&quot;)).AND (DE &quot;Inservice Education&quot; OR DE &quot;Inservice Teacher Education&quot;)</td>
<td>60</td>
</tr>
<tr>
<td><strong>PsycINFO</strong></td>
<td>(MAINSUBJECT.EXACT(&quot;Attitude Change&quot;) OR MAINSUBJECT.EXACT(&quot;Teacher Attitudes&quot;) OR MAINSUBJECT.EXACT(&quot;Disabled (Attitudes Toward)&quot;)).AND (MAINSUBJECT.EXACT(&quot;Inservice Training&quot;) OR MAINSUBJECT.EXACT(&quot;Inservice Teacher Education&quot;)).AND (MAINSUBJECT.EXACT(&quot;Special Education&quot;) OR MAINSUBJECT.EXACT(&quot;Mainstreaming&quot;) OR MAINSUBJECT.EXACT(&quot;Mainstreaming (Educational)&quot;).</td>
<td>9</td>
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</tbody>
</table>
| **Web of Science** | # 1 (TS="("Attitude Change" OR "Attitudes toward Disabilities" OR "Teacher Attitudes") OR "teacher attitudes toward inclusion")
# 2 (TS="("Mainstreaming" OR "Inclusion" OR "inclusive education") OR "inclusive environment")
# 3 (TS="("in-service training" OR "teacher training" OR "in-service program") OR "teacher development training") OR "in-service intervention") OR "inclusion training")
# 4 #3 AND #2 AND #1 |
| **Google Scholar** | ("Attitude Change" OR "Attitudes toward Disabilities" OR "Teacher Attitudes") AND ("Mainstreaming" OR "Inclusion") OR "inclusive education") OR "inclusive environment") AND ("Inservice Education" OR "Inservice Teacher Education") OR "in-service training") OR "teacher training") OR "in-service program") OR "teacher development training") OR "in-service intervention") OR "inclusion training") | 150            |
# Appendix B - Title and Abstract Selection Protocol

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</tr>
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<td>Study Design</td>
<td></td>
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</tr>
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## Appendix C - CASP Checklist for Randomized Controlled Trials

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<th>Yes/Can’t Tell/ No</th>
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<tr>
<td><strong>Section A: Are the results of the trial valid?</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 1. Did the trial address a focused issue? | ❖ The population studied  
❖ The intervention has given  
❖ The comparator is given  
❖ The outcomes considered |
| 2. Was the assignment of patients to treatments randomised? | ❖ How this was carried out  
❖ Was the allocation sequence concealed from researchers and patients? |
| 3. Were all of the patients who entered the trial properly accounted for at its conclusion? | ❖ Was the trial stopped early?  
❖ Were patients analysed in the groups to which they were randomised? |
| 4. Were patients, health workers, and study personnel ‘blind’ to treatment? | |
| 5. Were the groups similar at the start of the trial? | ❖ Other factors that might affect the outcome, such as age, sex, social class |
| 6. Aside from the experimental intervention, were the groups treated equally? | |
| **Section B: What are the results?** | |
| 7. How large was the treatment effect? | ❖ What outcomes were measured?  
❖ Is the primary outcome specified?  
❖ What results were found for each outcome? |
| 8. How precise was the estimate of the treatment effect? | ❖ What are the confidence limits? |
| **Section C: Will the results help locally?** | |
| 9. Can the results be applied to the local population, or in your context? | ❖ The patients covered by the trial are similar enough to the patients to whom you will apply this  
❖ How they differ? |
| 10. Were all clinically important outcomes considered? | ❖ There is other information you would like to have seen  
❖ If not, does this affect the decision? |
| 11. Are the benefits worth the harms and costs? | ❖ Even if this is not addressed by the trial, what do you think? |
## Appendix D - Data Extraction Protocol

<table>
<thead>
<tr>
<th>General Information</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>❖ Author(s)</td>
<td></td>
</tr>
<tr>
<td>❖ Country</td>
<td></td>
</tr>
<tr>
<td>❖ Title</td>
<td></td>
</tr>
<tr>
<td>❖ Publication Year</td>
<td></td>
</tr>
<tr>
<td>❖ Aim of the Study</td>
<td></td>
</tr>
<tr>
<td>❖ Research Question(s)/ Hypothesis</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study Design</th>
<th>Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Design</td>
<td>Sample size</td>
</tr>
<tr>
<td>Participants</td>
<td>Mean age</td>
</tr>
<tr>
<td>Intervention</td>
<td>Gender</td>
</tr>
<tr>
<td>Data Analysis</td>
<td>Teaching experience</td>
</tr>
<tr>
<td></td>
<td>Education level</td>
</tr>
<tr>
<td></td>
<td>Teachers’ role</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Sampling method</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Recruitment process</td>
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<tr>
<td></td>
<td>Comparison group</td>
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<tr>
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<td>Setting</td>
</tr>
<tr>
<td></td>
<td>Data collection tools</td>
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<tr>
<td></td>
<td>Intervention process</td>
</tr>
<tr>
<td></td>
<td>Duration of training</td>
</tr>
<tr>
<td></td>
<td>Follow-up period</td>
</tr>
<tr>
<td></td>
<td>Study design</td>
</tr>
<tr>
<td></td>
<td>Conceptual framework</td>
</tr>
<tr>
<td></td>
<td>Ethical approval</td>
</tr>
</tbody>
</table>

| Data analysis                                           | Quantitative analysis |

<table>
<thead>
<tr>
<th>Measurement</th>
<th>What scale was used to measure attitudes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>How were teachers' attitudes measured?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Was in-service training effective on teachers' attitudes?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Did training have positive, neutral, or negative impacts on teachers' attitudes?</td>
</tr>
<tr>
<td></td>
<td>Was the effect size assessed?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Conclusion</th>
<th>How did the author(s) conclude?</th>
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</table>