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ARTICLE



Teachers' collaborative professional development for inclusive education

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ABSTRACT

This is a systematic literature review aiming to systematically synthesize research of teachers' collaborative professional development (CPD) for inclusive education. In total, 21 articles out of 55 from three data-based met the inclusion criteria. Cohen's kappa was used to measure the agreement, found that the agreement between the raters was 0.72; substantial agreement. The results show that the definition of inclusive education differs, from the right to school attendance to full inclusion by participating in the same classes as other peers in the same age groups and environment. By that, models for collaborative professional development also vary. Most studies were small-scale projects without controls or data showing evidence for enhanced teacher or student outcomes or satisfaction. Accordingly, we could not obtain results showing powerful CPD models. We instead defined research gaps in systematic and evidence-based studies of collaborative professional development models for inclusive education. However, participation in professional development trainings resulted in teachers having more positive attitudes towards inclusive education. Results were also found that show that teachers who were most positive about inclusion also had the highest risks of burnout. Finally, results of the CPDs' effect on students' knowledge development in inclusive education was limited.

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1. Introduction

This study takes its starting point on findings from Teaching and Learning International Survey, TALIS 2013 (Rutkowski et al. 2013), showing a strong support for professional development training in the regular learning environment with colleagues. The results from TALIS 2013 (Organisation for Economic Co-operation and Development (OECD) 2014), together with findings from Timperly's (2011) studies, show that this form of professional development has a greater effect for the entire school's development work, than individual efforts based on the individual teacher's interest and responsibility. Furthermore, the results from TALIS 2013 (OECD 2014, Opfer 2016) points out that school leaders are challenged by the demand of inclusion of students with special needs, and principals in schools with high amount of students with SEN show lower job satisfaction in some countries. On the other hand, teachers report that one of the most critical need for

professional development is teaching students with SEN, and the result also point out that the professional development teachers are offered have low impact on their skills to teach student with SEN. Both in TALIS 2009 and 2013, the teachers report that an area which are rated as a high development need is related to teaching students with special needs (OECD 2014).

Emery and Vandenberg (2010) have found that special education needs (SEN) teachers are at high risk for burnout, have low job satisfaction as well as low self-efficacy, and high stress-levels, similar results were found in Jennett, Harris, and Mesibov (2003) study. Lauermaann and König (2016) found that increased professional self-efficacy decreases the risk of experiencing the feeling of burnout. This study is not about SEN teachers, the focus is on inclusive teaching and by that all teachers. Our assumption is that all teachers in an inclusive learning environment nowadays more or less meet and teach students with SEN, and by that general teachers are supposed to have similar experiences as SEN teachers. As a major aim of today's global education system is to enhance inclusive education, the education system is supposed to meet the diversity of all children. This is stated for more than 25 years ago, in the Salamanca declaration (UNESCO 1994). Inclusive education requires teachers to recognise diversity as a part of the human condition and prepare their students for participating in an inclusive social context after leaving school. But, results from TALIS 2013 points out challenges and difficulties experienced by both school leaders and teachers. There are significant findings showing enhanced and more sustainable effects of inclusive teaching by teachers participating in CPD (Goodnough 2011; Poekert 2012). Waitoller and Artiles (2013) reviewed collaborative professional development for inclusive teaching over a decade (2000–2009) and observed a deficiency of studies on collaborative professional development (CPD) for inclusive education. The authors screened 1115 articles and selected 46. The main part of the articles reviewed by Waitoller and Artiles (2013) were from the United States (US) (24) and the United Kingdom (UK) (7). Most articles were action research studies (22) and only a few were conducted collaboratively with teachers at the studied school (12). The fact that only 12 articles out of 1115 report on CPD for inclusive education indicates the need for further studies whether more articles can be found by a more-specific search as well as by widening the time span, which this study addresses.

Based on the findings presented above, this study is targeting research results from collaborative professional development in the classroom context, aiming to enhance teachers' skills to enhance inclusive education. The definition of collaborative professional development is based on Zeng and Day's (2019) definition as 'shared, sustained learning involving two or more teachers' (p. 379). The targeted studies are not focusing ordinary professional development, e.g. external courses for teachers, but CPD at school and in collaboration with other teachers or between teachers and researchers. Even if mainstream education is included as one of the search words, mainstream education is different from 'full inclusion', as mainstream education can be referring to a physical placement (in the classroom) when the SEN students are expected to have the skills to participate (Avramidis, Bayliss, and Burden 2000). In this review, the focus is instead on what can be defined as 'full inclusion' (Done and Andrews 2019). The reason for deciding to limit the search to this kind of CPD studies is based on the findings from, for example, Hunt (2019), who claims that teachers need to work collaboratively to develop inclusive education, beyond physical placement. Additionally, Florian (2019) found that even if

there is an agreement about the benefits of inclusive teaching, many students feel they do not get the needed support to learn and develop in inclusive settings. To capture research findings about how teachers can be better prepared to teach in inclusive settings, this systematic literature review (Hart 2018) was performed to synthesise results of teachers' CPD for inclusive teaching.

1.1 Aim

This study aims to systematically synthesise research of teachers' collaborative professional development (CPD) for inclusive education. Four research questions (RQ) were formulated:

RQ1: What definitions of 'inclusive education' are prominent in the analysed research projects?

RQ2: What definitions of CPD were found?

RQ3: Which theoretical and methodological perspectives were prominent?

RQ4: What results were generated?

The research questions address different views of importance for teacher abilities to teach in inclusive settings. First of all, to understand the outcomes of the studies of CPD for inclusive education there is a need to understand how inclusive education is understood in the context studied. It might be difficult to transfer findings to contexts with different interpretations of the concept. The second RQ is following up this, as it elaborates further on the differences in models designed for CPD. To understand the findings of RQ 2, the theoretical perspectives are important to identify as the assumptions indicate what focus on inclusive education the studies have, and regarding the methodological perspectives there is a need to evaluate the findings from the kind of population and data collected. The last RQ is probably the most important, as it addresses what variables might be found to be important predictors of how to design CPD for enhanced inclusive education.

2. CPD for inclusive education

The concept of 'inclusive education' is used differently in different contexts and cultures (Norwich 2008). The identified articles were analysed to capture different aspects of the findings. Firstly, an analysis of the different definitions of professional development and inclusive education used by the researchers was performed. Secondly, the theoretical and methodological perspectives and what results were presented in the published research were described. The results of the review can be used to create a compiled source for research in the field, guiding decision-making, or to inform the design of CPD. This research analysis and synthesis also identifies research gaps that can be used to suggest further research areas to enhance teachers' professional development for inclusive education. Hornby (2015) observed that inclusive education is based on 'different philosophies and provide alternative approaches' (p. 237). This makes it difficult to provide professionals with

a common basis for decisions about how to enhance inclusive education for students with special educational needs (SEN). These differences can be described by reviewing the research literature in this field. The specified keywords for the search are a variety of concepts describing CPD (excluding mentoring or online or faculty courses or teachers' in-service training) and inclusive education (excluding special schools or forms of segregated education or mainstream education). No time limit was set because Waitoller and Artiles' (2013) review showed a low rate of identified articles; however, the requirement of only including peer-reviewed articles was retained in the search for high-quality research results.

Kleinknecht and Schneider (2013) studied teachers observing each other or themselves on video recordings and found that teachers observing videos of other teachers tended to analyse the situations with greater depth. However, these teachers evaluated their own negative events more superficially. Teachers found that analysing their own teaching was more emotionally challenging than analysing other teachers' teaching. Furthermore, the teachers' disappointment with the teaching that they observed made them search for alternatives and changes. Klassen and Chiu (2010) confirmed that 'teachers observing others' teaching are conceivably better able to concentrate on critical situations and analyse sequences in greater depth' (p. 21), and 'our study demonstrates the benefits of comparing teachers' analysis of their own and others' videos' (p. 22). Seidel et al. (2011) found that teachers who individually analysed their own video-recorded lessons noticed that their attention shifted to focusing on their students' learning about the subject matter. Such examples of CPD show the strength of its general use, which is addressed in this review.

3. Materials and methods

3.1 Database selection

The databases used to search for relevant articles were the Educational Resources Information Centre (ERIC) and Educational Research Complete (ERC) via EBSCO host and Web of Science. ERIC and ERC were used because of their focus on educational research. Web of Science is a multidisciplinary database that includes educational research; thus, it was used to identify core articles in the field that might not have been included in ERIC or ERC.

3.2 Identification of evidence

The search strings are presented in Table 1, in addition to the years of publication and hits. Only peer-reviewed articles were collected. No time limit was applied.

3.3 Procedure and reliability

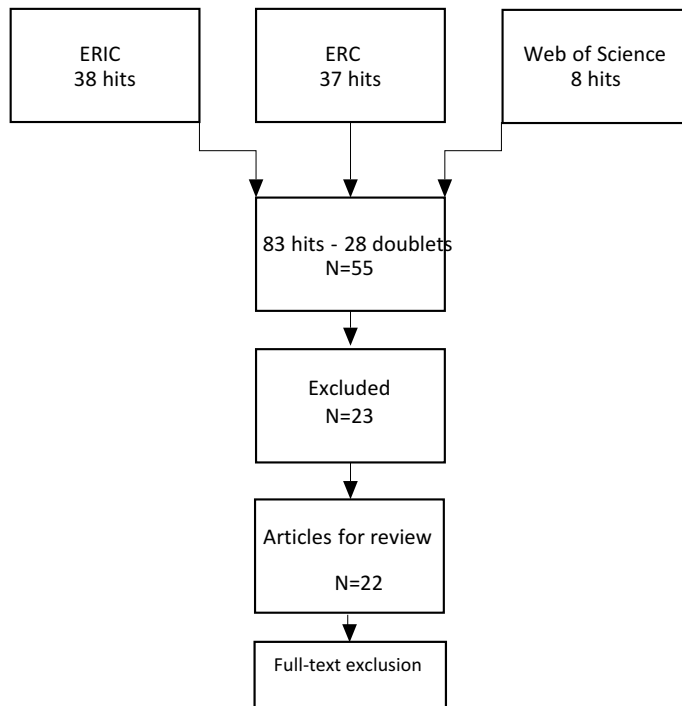
This literature study is a systematic review (Gough, Oliver, and Thomas 2017) of aggregated data from a total of 55 peer-reviewed articles. The procedure of the search is presented in Figure 1.

Even if this number is quite low, it is in accordance with the findings in Waitoller and Artiles (2013) review; however, almost double the number of articles that met the inclusion criteria were obtained (Table 2), which was probably mainly due to the lack of a time limit.

Table 1. Database searches (2019–02-01).

Database	Keywords	Limit to	Year of found publications ^a	Hits
Educational Resources Information Centre (ERIC) via EBSCOhost	Collaborative professional development OR collaborative professional learning AND Mainstreaming OR inclusion OR inclusive OR special needs OR special education	Peer review AND Academic journals (AJ)	1993–2018	37
Education Research Complete (ERC) via EBSCOhost	Collaborative professional development OR collaborative professional learning AND Mainstreaming OR inclusion OR inclusive OR special needs OR special education	Peer review AND AJ	1996–2019	38
Web of Science	Advanced search: (Mainstreaming OR inclusion OR inclusive OR special needs OR special education) AND (Collaborative professional development OR collaborative professional learning)	Peer review	2011–2019	8

^aThere was no time limit set, the span of years reported indicate the period for found articles, without any time restriction.

**Figure 1.** Operational steps.

After the assessment of the titles, abstracts, keywords and full-text readings in some cases, 22 articles were included in the final data collection (Table 3). One article was excluded because it was an editorial introduction. Therefore, 21 articles were analysed. Six of them only found in ERIC, six only found in ERC, six in both ERIC and ERC, and finally two articles found in all three databases.

Table 2. Inclusion and exclusion criteria.

Inclusion	Exclusion
Peer review	Not peer-reviewed
Compulsory elementary school K-9 (ages 6–16)	Other schools and ages than K-9 or ages before/after 6–16
CPD in-service training for teachers with on-site participation	Other professional development than collaborative and/or not including on-site teachers' participation
Inclusion	No focus on inclusive education
Special education	No focus on special education

Only articles meeting all the inclusion criteria were selected for the analysis. Both authors assessed the articles separately. The first reading focused on the title, abstract and keywords. If this reading did not give enough information to assess the article, the whole article was read. Interrater reliability was used during the analysis (Armstrong et al. 1997). All 55 articles were assessed by both authors who showed a consensus for 45 articles (81.8%). Cohen's kappa was used to measure the agreement (Cohen 1960). The range was between -1 and $+1$, with $+1$ representing 'perfect agreement' between raters and -1 representing 'perfect disagreement'. The agreement between the raters was 0.72, which indicates 'substantial agreement'. The 10 articles where the researchers did not achieve consensus were analysed by a group of three researchers in the same field as the authors. Their assessment resulted in the inclusion of five of the articles without consensus, while the other five were excluded from the review. One article was excluded during the full-text readings in the analysis because it was found to be an editorial, which resulted in the inclusion of 21 articles for the analysis. The complete list of articles obtained from the searches is presented in Appendix 1.

Table 3. Articles included in the final analysis.

Article number	Author (Publication year)	ERIC	ERC	Web of Science
1	Brusca-Vega, Alexander, and Kamin (2014)	X		
2	Chan and Lo (2017)	X	X	
3	Katz (2015)	X	X	
4	Kempen and Steyn (2016)	X	X	
5	Juma, Lehtomäki, and Naukkarinen (2017)	X	X	
6	Carrington, Deppeler, and Moss (2010)	X		
7	Brownell et al. (2006)	X	X	X
8	Ho and Arthur-Kelly (2013)	X	X	
9	Leko et al. (2015)	X	X	X
10	Simpson et al. (2016)	X	X	
11	Kennedy and Shiel (2010)	X		
12	Dynak, Whitten, and Dynak (1997)	X		
13	Wesson, Voltz, and Ridley (1994)	X		
14	Paul, Duchnowski, and Danforth (1993)	X		
15	Ho et al. (2018)		X	
16	Faraclas (2018)		X	
17	Bos et al. (1999)		X	
18	Nevárez-La Torre and Sanford-De Shields (1999)		X	
19	Greenwood et al. (2003)		X	
20	Rinaldi, Averill, and Stuart (2011)		X	
21	Thomas et al. (2012)			X

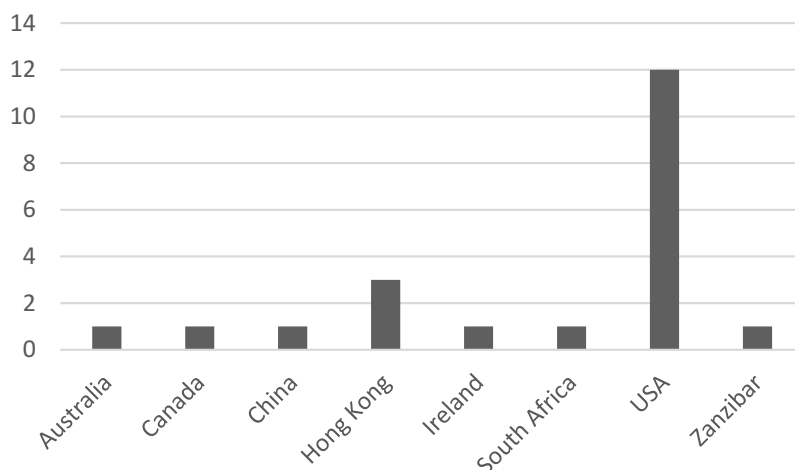
4. Results

A thematic analysis (Creswell and Creswell 2017) was conducted to answer the RQs presented above. An initial descriptive analysis shows that 12 of the 21 analysed articles represents studies in the USA (57%), followed by three from Hong Kong (14%), and one each from Australia, China, Canada, Ireland, South Africa and Zanzibar. Fourteen (67%) of the articles were published in the last ten years, two between 2000 and 2009, and five in the 1990s. The analysis of definitions, theoretical perspectives and methodology is presented in Appendix 1.

4.1 Definitions of inclusive education

To capture what definition used of inclusive education, for better understanding of the design of the CPD studied, differences of what ‘full inclusion’ means were found. Four categories were identified in the analysis of definitions used (Appendix 1). The first and largest category ($n = 12$ or 57% of the articles) was based on a definition of inclusion as the right for all students to be taught in the same classroom, regardless of the conditions (Brusca-Vega, Alexander, and Kamin 2014; Juma, Lehtomäki, and Naukkarinen 2017; Carrington, Deppeler, and Moss 2010; Brownell et al. 2006; Leko et al. 2015; Kennedy and Shiel 2010; Dynak, Whitten, and Dynak 1997; Wesson, Voltz, and Ridley 1994; Paul, Duchnowski, and Danforth 1993; Ho et al. 2018; Faraclas 2018; Thomas et al. 2012).

The studies where ‘full inclusion’ is prominent take for granted the children’s right to access inclusive education and also the teachers’ capability to manage inclusive education in mainstream schools or/and general classrooms. The definition of inclusive education in this category is mainly focused on the setting and has been labelled as *classroom inclusion*. The second category is the opposite because of the limited level of inclusion and students in this context have no right to access inclusive education (Kempen and Steyn 2016; Ho and Arthur-Kelly 2013; Simpson et al. 2016). In this category, *basic inclusion* (see the medium grey shading in Appendix 1), is defined by a situation where education is not taken for granted or might not be provided at all. The studies ($n = 3$ or 14% of the articles) were focused on how to enhance the opportunities for the whole student population to receive an education. The definition of inclusive education in the third category of inclusion is based on assumptions of inclusion not being limited to cognitive or educational issues, instead the focus is on general societal aspects (Chan and Lo 2017; Katz 2015; Nevárez-La Torre and Sanford-De Shields 1999). The articles in this category ($n = 3$ or 14% of the articles) were labelled *general inclusion* (see the light grey shading in Table 4). In this category, the inclusive approach is general and includes all different kinds of at-risk students, which is a wider focus than focusing on their academic skills alone. This approach includes socioeconomic, cultural and religious challenges. Therefore, this general approach is not solely related to the students’ cognitive abilities. Finally, the fourth category collects articles with a focus on identifying and helping at-risk students who experience difficulties at school. In this category, inclusive education is strongly connected to the content taught and including all students with a focus on making knowledge accessible for all (Bos et al. 1999; Greenwood et al. 2003; Rinaldi, Averill, and Stuart 2011). This category is named *content inclusion* (see the dark grey shading in Table 4), which focuses on methods used to find at-risk students at an early stage to prevent them

Table 4. Articles per country

from experiencing failure in subject learning resulting in future exclusion at school ($n = 3$ or 14% of the articles). These results do not focus on the already identified students in need for inclusive teaching, but rather guide the teachers to find and then work with at-risk students to avoid future failure at school.

The studies in the first category, *classroom inclusion*, that is, education for students with disabilities in regular schools, focus on how teachers can develop their skills to teach a wider spectrum of students than before. In these studies, the right to be taught in the same classroom as other students is seen as a matter of course. Enhancing the quality of instruction through teachers' professional development is seen as a crucial factor for developing inclusive education. Brusca-Vega, Alexander, and Kamin (2014) proposed that at least 40% of education should be spent in regular classrooms. Their analysis also showed a long tradition of research into inclusive education in the USA. As no time limit for the search was used, we found studies from nearly 30 years ago. All of the studies found in the search from the 1990s were from the USA (Dynak, Whitten, and Dynak 1997; Paul, Duchnowski, and Danforth 1993; Wesson, Voltz, and Ridley 1994). In this category, eight of these studies are from the USA, while the remaining four are from Australia, Hong Kong, Ireland and Zanzibar.

The second category, *basic inclusion*, does not take mainstream education as a stance because students with disabilities are not guaranteed education at all in the studied contexts. By that, inclusive education is far away. Kempen and Steyn (2016) studied the situation in South Africa, where resource schools are supposed to provide special education support in mainstream schools. The lack of SEN teachers in South Africa will result in more exclusion from school situations for students with SEN while the students in the resource schools will simultaneously experience a lack of educational quality. In Hong Kong, Ho and Arthur-Kelly (2013) obtained similar findings about mainstream schools needing support from the resource schools. Finally, Simpson et al. (2016) explored the situation in China where students with autism spectrum disorders (ASD) have no right

to education at all, which puts great pressure on their parents, who are left with the full responsibility for their child's education.

In the third category, *general inclusion*, the definition of inclusive education is based on a general perspective of inclusion including not only disabilities but also socio-economic and cultural perspectives. The included studies were from Hong Kong, Canada and the USA. Two of them focused on equity (Chan and Lo 2017; Nevárez-La Torre and Sanford-De Shields 1999) by studying teachers' identity and attitudes about inclusive teaching. The third study (Katz 2015) explores the problem of 47% of Canadian teachers leaving their teaching occupation. Katz (2015) also found that teachers with the strongest beliefs in inclusion also were at a higher risk of burnout. The outcomes in this category are based on teachers' data.

Finally, the fourth category, *content inclusion*, captured the studies focusing on content knowledge development to avoid future school failures by identifying at-risk students at an early stage to prevent their later exclusion. Three such studies were found (Bos et al. 1999; Greenwood et al. 2003; Rinaldi, Averill, and Stuart 2011), all in the field of literacy/reading and all from the USA. The studied methods were reading instructional methods of efficacy (Bos et al. 1999), curriculum-based measurement (CBM) reading fluency (Greenwood et al. 2003), and response to intervention (RTI) (Rinaldi et al. 2011, Rinaldi, Averill, and Stuart 2011). The outcomes of the studies in this category are also based on students' learning outcomes. The distribution of the countries where the studies were based is summarised in Table 4.

4.2 Definitions of CPD

In most of the articles ($n = 17$ 81%), researchers were involved to implement and develop teachers' skills to use a collaborative professional development model and observed and studied the teachers' CPD. Few studies ($n = 4$) had a design where the teachers and researchers worked collaboratively to enhance the teaching practices. Six of the articles with CPD models aim to implement or foster the general idea of inclusive education and thus enhance the teachers' general skills to teach a diversity of students (e.g. Brusca-Vega, Alexander, and Kamin 2014; Chan and Lo 2017; Katz 2015). The remainder of the studies focused on implementing methods, such as CPD for co-teaching (e.g. Faraclas 2018). The studies' focuses are mainly on general issues, such as inclusive education, or more specific topics, such as theory of mind, literacy or technology. Four studies reported findings on a design where the teachers and researchers collaboratively designed and implemented the research in the classroom (Paul, Duchnowski, and Danforth 1993; Nevárez-La Torre and Sanford-De Shields 1999; Greenwood et al. 2003; Rinaldi, Averill, and Stuart 2011). The researchers who worked collaboratively with teachers to define the focus of their research and implementation identified new perspectives on what questions could be defined. Paul, Duchnowski, and Danforth (1993) found that the teachers were not meeting the needs of schools, while Greenwood et al. (2003) found that the sustainability was weak after the researchers left the school because the teachers did not subsequently increase their use of the new strategies. Only one of the studies (Rinaldi, Averill, and Stuart 2011) explicitly involved the teachers as co-leaders of the project, which resulted in their ownership of the process and a change in the staff culture at the school and an increased feeling of self-efficacy. One explanation of the teachers' sustainability difficulties, might be

that the teachers do not share the interest or focus of the study with the researchers. An exception was Rinaldi et al.'s (2011) study, where a RTI model was introduced to the teachers and their understanding of its usefulness resulted in their continuing to use the new model after the researchers left the school.

4.3 Theoretical perspectives

In total, the 21 articles represent 15 different theoretical perspectives, including two studies identified using two perspectives (Paul, Duchnowski, and Danforth 1993; Ho et al. 2018). Most of the studies were based on a framework within a cultural historical perspective with 7 (33%) of the articles identified in this field (Chan and Lo 2017; Kempen and Steyn 2016; Juma, Lehtomäki, and Naukkarinen 2017; Ho and Arthur-Kelly 2013; Leko et al. 2015; Simpson et al. 2016; Paul, Duchnowski, and Danforth 1993). Variations within this perspective were also included, such as communities of practice, situated learning, socio-cultural, social theories of learning, social constructivism and learning communities.

The second largest focus in the studies was constructivism, including active learning (Kennedy and Shiel 2010; Faraclas 2018; Thomas et al. 2012). Action research was used in two studies (Brusca-Vega, Alexander, and Kamin 2014; Ho et al. 2018), which also applies to the universal design for learning (UDL) framework (Katz 2015; Thomas et al. 2012).

Single articles that used the following frameworks were identified: critical social theory (Carrington, Deppeler, and Moss 2010), CBM (Greenwood et al. 2003), equity framework (Nevárez-La Torre and Sanford-De Shields 1999), pedagogical content knowledge (PCK) (Kennedy and Shiel 2010), phonological awareness (Bos et al. 1999), pragmatism (Dynak, Whitten, and Dynak 1997), science of professional development (Brownell et al. 2006), the model of change (Wesson, Voltz, and Ridley 1994), theory of mind (Ho et al. 2018) and RTI (Rinaldi, Averill, and Stuart 2011).

4.4 Methodological approaches

Eight studies used a qualitative approach with interviews (Chan and Lo 2017; Kempen and Steyn 2016; Juma, Lehtomäki, and Naukkarinen 2017; Brownell et al. 2006; Kennedy and Shiel 2010; Ho et al. 2018; Bos et al. 1999; Rinaldi, Averill, and Stuart 2011). In six studies (Katz 2015; Ho and Arthur-Kelly 2013; Ho et al. 2018; Faraclas 2018; Bos et al. 1999; Greenwood et al. 2003), tests, surveys or questionnaires were used in quantitative analyses based on a large data sample. Four studies used observations (Brusca-Vega, Alexander, and Kamin 2014; Brownell et al. 2006; Greenwood et al. 2003; Thomas et al. 2012).

Eighteen of the 21 studies used teachers' data as a unit of analysis. The other three studies (Ho et al. 2018; Bos et al. 1999; Greenwood et al. 2003) included learning outcome data from the students. In Ho et al.'s (2018) study, this refers to the emotional performance of students with ASD. In Bos et al.'s (1999) study, the data were from the students' learning outcomes in early literacy. Finally, in Greenwood et al.'s (2003) study, the students' data were captured from their reading skills.

Six of the studies (Chan and Lo 2017; Kempen and Steyn 2016; Brownell et al. 2006; Leko et al. 2015; Simpson et al. 2016; Rinaldi, Averill, and Stuart 2011) are small-scale studies, while the rest are large-scale studies. Six studies only implicitly describe how

many participants were included because the cases include one or more schools or programmes (Kempen and Steyn 2016; Juma, Lehtomäki, and Naukkarinen 2017; Carrington, Deppeler, and Moss 2010; Wesson, Voltz, and Ridley 1994; Paul, Duchnowski, and Danforth 1993; Nevárez-La Torre and Sanford-De Shields 1999).

4.6 Results – improved outcomes for both teachers and students

The main part of the studies focused collaboration between teachers, but four of the studies were based on a collaboration between researchers and teachers based on the teachers' perspectives (Paul, Duchnowski, and Danforth 1993; Nevárez-La Torre and Sanford-De Shields 1999; Greenwood et al. 2003; Rinaldi, Averill, and Stuart 2011). Thus, a research gap is hereby identified as studies to identify and changes practice from the perspective of teachers are rare.

The result indicates that CPD gives improved outcomes for both teachers and students. Kempen and Steyn (2016) study supported this by finding that special schools that supported mainstream schools resulted in benefits both for the students, teachers and organisations. However, it could be claimed that a study in the *basic inclusion* category is not of interest in contexts where *classroom inclusion* is the main definition of how inclusive education should be organised. Instead, in this category, Juma, Lehtomäki, and Naukkarinen (2017) found that collaborative action research resulted in both teachers' inclusive pedagogy and students' presence. In line with this, Bos et al. (1999) reported that the teachers were more satisfied and enhanced students' knowledge outcomes in classes where the teachers had participated in the CPD, but not in the control classes. However, the results from Greenwood et al. (2003) showed that there was no proof for differences between students' knowledge development in different evidence-based practices. Even if Rinaldi, Averill, and Stuart (2011) found evidence for enhanced learning outcomes for teachers and students, they did not use different models or controls pointing at differences related to the different models used. Finally, Thomas et al. (2012) also found evidence for significant changes in classroom behaviours for both teachers and students, as the quantity and quality of questions and time spent in small-group discussions changed. Even if the results point at positive development, the few studies mean that it is not possible to draw conclusions about what matters when it comes to the choice of model. Some studies indicate that CPD results in knowledge development for both teachers and students, but more studies must be conducted to develop a solid understanding. Especially the relation between the teachers' enhanced knowledge and changed attitudes, and how this effect the students' feeling of inclusiveness, is an under-researched area.

5. Discussion

The synthesised research of teachers' collaborative professional development (CPD) for inclusive education showed four different definitions of inclusive education; basic inclusion, classroom inclusion, general inclusion and content inclusion. As inclusive education is implemented differently in different social contexts, e.g. countries, the studies are pending between the aim to change schools to accept students with disabilities in education at all, and to enhance classroom instruction to include all students no matter of disabilities. This is a dimension which handles the *level of inclusion*. The other

dimension has a focus of *what is inclusive*, pending between a focus on the content taught in the classroom to general aspects including other aspects than disabilities, such as socio-economic and cultural perspectives to foster social justice.

Main part of the studies have a design where the collaboration focused is between teachers, but in four studies the researchers and teachers were working together with the teachers (Paul, Duchnowski, and Danforth 1993; Nevárez-La Torre and Sanford-De Shields 1999; Greenwood et al. 2003; Rinaldi, Averill, and Stuart 2011). In one of these four studies, the teachers were also introduced as co-leaders for the research project, which resulted in a strong sustainability (Rinaldi, Averill, and Stuart 2011).

As the focus is on collaborative development in a social context, it might not be surprising that cultural historical perspective was used in a third of the studies. Besides this, constructivism was used in three studies and action research in two. The other studies were all representing one theoretical perspective each. In all but three studies (Ho et al. 2018; Bos et al. 1999; Greenwood et al. 2003), who have included learning outcome data from the students, data were collected from teachers. The main method used was qualitatively analysed interviews (eight studies), followed by questionnaires and surveys quantitatively analysed (six studies), and four observations.

The result indicates that CPD gives improved outcomes for both teachers and students, even if there are few studies taking into consideration the students' result. The main part of the changes targeted attitudes of inclusive education. An issue found is the sustainability, which is not convincing. Many of the studies had an aim to change teachers' attitudes towards teaching students with disability, and the result indicates that the teachers' attitudes change. But if this results in changes in the contact with the students is not captured. Even if the attitudes change, the important work for inclusive education is in the classroom, when the teachers meet the students, and this review shows a lack of research regarding how to use CPD to enhance inclusive education at a classroom level.

This review did not get many hits, which is in accordance with the findings of Waitoller and Artiles (2013). This means there is a need of further research in this area, with rigorous scientific approaches to investigate the effect of CPD in inclusive education on relevant metrics, such as student performance. Few of the studies related CPD to student outcomes. Instead, the attitudes about the research implementation were assessed, which can be misleading because the teachers do not experience different models. Only one study used controls, which showed that there was no difference between different evidence-based models.

The research results of our review do not present solid results of in what way CPD could lead to high-quality teaching and improved student outcomes. Instead, the review points at gaps and a lack of studies into how CPD can be developed to capture the challenges and problems teachers experience in their daily inclusive classrooms, to enhance both teachers' and students' development.

6. Limitations

This study has a narrow focus on CPD for inclusive education; therefore, studies about general CPD were not captured. This might be a weakness because models unifying teachers' and students' learning in the search could also contribute to capturing results for how to enhance students' learning in inclusive settings. Another limitation is the year the studies were

analysed is published: some are more than 20 years old. The reason for not using a time limit was the few hits obtained by previous reviews in areas close to the focus of this study.

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