Impact of continuous professional development and working conditions of early childhood education and care practitioners on quality, staff-child interactions and children's outcomes: a systematic synthesis of research evidence.

Review Report

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Author contributions

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This systematic review was coordinated by senior researchers Jan Peeters and Claire Cameron. The protocol was developed by Hanan Hauari, Arianna Lazzari, Jan Peeters and Claire Cameron. The searching, screening and mapping procedures were undertaken by Hanan Hauari, Arianna Lazzari, Hanna Siarova, Irma Budginaite and Brecht Peleman with assistance from Lisa Durabile and Kenny Verspaille. Data extraction and quality assessment tools were developed by Hanan Hauari, Arianna Lazzari, Jan Peeters and Claire Cameron. Data were extracted by Irma Budginaite, Hanna Siarova, Arianna Lazzari, Hanan Hauari, Brecht Peleman, Jan Peeters and Claire Cameron.

The included impact (quantitative) studies were synthesized and quality appraised by Hanan Hauari, Irma Budginaite, Hanna Siarova, Brecht Peleman, Jan Peeters and Claire Cameron. The included views (qualitative) studies were synthesized and quality appraised by Arianna Lazzari, Brecht Peleman, Hanna Siarova and Jan Peeters. Claire Cameron edited the report. All authors approved the final version of the report.

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Executive Summary

Introduction

The central question of this report is the impact of the working conditions and continuous professional development of the Early Childhood Education and Care (ECEC) workforce on the quality of the services provided and in particular on the outcomes for children. The report reviews research evidence from all 28 EU Member States, including both English and non-English language studies. The aim is to identify how the training and development of ECEC workers, who operate in a range of types of setting, might be tailored to most effectively improve the quality of the care and education services available for children below primary school age in European Member States.

This report adopted the systematic review methodology elaborated by the EPPI-Centre at the Institute of Education University of London, for informing evidence-based policies. The review establishes what are known to be, on the basis of available research evidence, the links between CPD interventions, working conditions and outcomes for children and, in so doing, aims to inform policy-makers' decisions on effective strategies for sustaining ECEC quality through investment in the ECEC workforce.

Policy context

In the quest for high quality services recent EU and OECD policy documents highlight that improving the working conditions and enhancing the professional development of the ECEC workforce are critical measures to meet the dual challenge of providing equitable access to services while also improving the quality of provision.

The Council conclusions on early childhood education and care from May 2011 mention as measures to improve provision "supporting the professionalization of ECEC staff, with an emphasis on the development of their competences, qualifications and working conditions, and enhancing the prestige of the profession". The 2006 European Commission communication on efficiency and equity in European education and training systems points out the long term returns of early childhood education and states that 'the supply of specially trained pre-primary teachers will need to be improved in many countries'. The European Quality Framework on ECEC includes two statements focusing on the role played by ECEC workforce in contributing to enhance pedagogical quality of services for young children and to improve children's outcomes. Similarly, the OECD Quality Toolbox focuses on working conditions and in-service training and reviews the evidence available linking these two elements with children's outcomes.

Key findings

Evidence on the benefits of continuing professional development

In general we can conclude that CPD interventions that are integrated into the ECEC centre's practice with a focus on reflection that leads to changes in practice and curricula (feedback component) are effective. For short term training, intensive intervention with a video-feedback component have been found to be effective in fostering practitioners' competences in care giving and language stimulation and, regarding children short term outcomes, there were significant gains in terms of language acquisition and cognitive development.

Long-term CPD interventions integrated into practice, such as pedagogical guidance and coaching in reflection groups, have been proven to be effective in very different contexts: in countries with a well-established system of ECEC provisions and a high level of qualification requirements for the practitioners, but also in countries with scarcely subsidized ECEC systems and low qualification requirements. Thus, independent of the kind of ECEC system, long-term pedagogical support to staff provided by specialized coaches or pedagogical counsellors in reflection groups was found to be effective in enhancing the quality of ECEC services, as well as in improving children's cognitive and social development.

The impact of CPD interventions on staff-child interactions and children's outcomes might be explained – to a certain extent – by the positive effects that training and its follow-up activities have on practitioners' knowledge, practice and understandings. In particular, long-term CPD initiatives that build upon practitioners' needs and participation are found to be successful in increasing ECEC staff pedagogical awareness and professional understanding. By enhancing practitioners' reflectivity both at individual and at team level, CPD activities allow ECEC professionals to strengthen their capacities and address areas for improvement in everyday practices. CPD interventions can redirect the practitioners' role towards active listening, and can develop a learning orientation towards play discovery and an appreciation of the learning gains for children's spontaneity, curiosity and inventiveness.

The participation in CPD initiatives sustain practitioners' competence in developing, implementing and evaluating ECEC curricula or pedagogical frameworks starting from the needs of the children they are working with. This, in turn, might nurture children's learning more effectively.

In addition, engaging in participatory CPD activities within highly socio-culturally diverse ECEC contexts can lead practitioners to reconceptualise their role in parental involvement and to elaborate more responsive educational strategies. These include, for example, a more welcoming approach that enables parents to engage in a reciprocal dialogue with practitioners and to participate in educational decision-making processes within early childhood settings.

The evidence reviewed also suggests what the critical success factors determining the effect of CPD provision on the practitioners might be. First, the CPD intervention has to be embedded in a coherent pedagogical framework or curriculum that builds upon research and addresses local

needs. Second, there has to be an active involvement of practitioners in the transformative process for the improvement of educational practices within ECEC settings. And third, CPD needs to be focused on practitioners learning in practice, in dialogue with colleagues and parents and therefore a mentor or coach has to be available during ECEC staff non-contact hours. Fourth, CPD interventions also require changes in working conditions, especially the availability of non-contact time.

Concerning the desirable duration of the intervention, evidence shows that intensive CPD programmes with a video feedback component might be more effective for the achievement of short-terms outcomes, whereas long-term CPD initiatives accompanied by pedagogical guidance and coaching in reflection groups might be more effective for enhancing and sustaining the quality of ECEC services over long periods of time. In this sense, different combinations of CPD delivery modes do not have to be seen in opposition but rather as complementary, serving different purposes in different contexts.

The link between CPD and children's outcomes is rarely the direct focus of European studies in this field and so we cannot conclude what the nature of the link is, because it is insufficiently investigated. The focus in most studies is the quality of the practice in the setting and the quality of the children's experience. From this, a values approach, very present in European research, one might conclude that high quality experience would lead to better cognitive outcomes and socialising abilities.

Evidence on the impact of working conditions

Only five studies rated as reliable found that, broadly speaking, staff:child ratio and class-size have positive effects on the quality of practitioners' practices and on staff-child interaction. However, the studies adopted different measurements of staff:child ratio and class-size and different tools in order to evaluate their effects on practitioners' practice or their impact on staff-child interactions and children's outcomes. There must, therefore, be concerns about comparability of outcomes measures across countries.

Conclusions

- Intensive CPD programmes with video feedback component proved to be effective for the achievement of short-terms outcomes,
- Long-term CPD initiatives accompanied by pedagogical guidance and coaching in reflection groups proved to be effective for enhancing and sustaining the quality of ECEC services over long periods of time
- Research on working conditions in Europe is mostly carried out within research designs that – albeit rigorous – might not necessary comply with the highest standards of systematic reviews: this is a concern that might be brought to the attention of policy-makers and researchers when conducting systematic reviews
- The further elaboration of systematic review procedures that address challenges and possibilities of reviewing literature in multiple languages might be considered: the richness of research and pedagogical traditions displayed across European Member States definitely call for an increased attention toward studies published in languages other than English.

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Introduction

The focus of this report is the European research evidence relating to the impact of two aspects of the organisation and deployment of the Early Childhood Education and Care (ECEC) workforce, namely, continuous professional development, and working conditions, on the quality of the services provided. Two aspects of quality are of particular concern: the impact on staff-child interaction and on the cognitive and social outcomes of attending services for children.

The report was commissioned, as part of a larger Eurofound project, to identify how the training and working conditions of ECEC workers, who operate in a range of types of setting, might be tailored to most effectively improve the quality of the care and education services available for children below primary school age in European member states.

This report adopted the systematic review methodology elaborated by the EPPI-Centre for informing evidence-based policies and was carried out in EU28 Member States. The review establishes what are known to be, on the basis of available research evidence, the links between staff training and working conditions and outcomes for children and, in so doing, aims to inform policy-makers' decisions on effective strategies for sustaining ECEC quality through investment in the ECEC workforce.

Why working conditions and in-service training are important for the quality of services and the outcomes for children

In response to recent demographic, economic and social challenges, early childhood education and care has risen up the European policy agenda. Research has shown the beneficial effects of ECEC services for children, families and society at large. At the same time, ECEC quality and accessibility are crucial for laying the foundation of children's successful learning and for fostering social inclusion in contexts of increasing diversity (Bennett, 2012).However, despite the EU being a world leader in providing ECEC services, international reports have identified that more efforts need to be made in order to increase quality and accessibility of provision across Member States (NESSE, 2009). For example, the Third European Quality of Life Survey (Eurofound, 2012), found that for just over a quarter (27%) of European citizens interviewed, local childcare services are of low quality, making their use difficult.

Nevertheless, the advantages of investing in high quality and accessible ECEC provision are being pursued by international policies at EU level and beyond.

In May 2011, the EU Council concluded that while considerable attention had been given to the quantity of ECEC places, high quality ECEC was equally important (Council of the European Union, 2011). The European Commission DG Education and Culture responded to these Council conclusions by setting up a Thematic Working Group on Early Childhood Education and Care. This initiative is set up within the context of the 'Strategic framework for European cooperation in education and training' (ET2020). The Thematic Working Group (a group of representatives of 26 EU Member States) is currently developing a *European Quality Framework* on ECEC. They met

eight times and the results of this Thematic Working Group were discussed by a group of ECEC Stakeholders, in order to create, support and facilitate the implementation of this European Quality Framework (EQF) throughout the member states. The European Quality Framework on ECEC has been presented on the EU Presidency conference in Athens in June 2014. The EQF consists of eight statements, two of which focus specifically on the role played by ECEC workforce in contributing to enhance pedagogical quality of services for young children and to improve children's outcomes. EQF's statements 3 and 4 on ECEC workforce encourage EU Member States to: a) develop comprehensive training programmes for all staff employed in these services (e.g. preschool teachers, assistants, educators, family day carers and so on); and b) provide supportive conditions which create opportunities for observation, reflections, planning, teamwork and cooperation with parents.

Beyond the EU context, ECEC professional development and staff working conditions have been increasingly recognised as important determinants of quality by international policy organisations, such as the OECD. Research briefs recently produced within the OECD quality project (*Encouraging Quality in Early Childhood Education and Care*) highlight that staff working conditions and professional development are fundamental components of structural and process quality that are linked to children's cognitive and non-cognitive attainment (OECD, 2012a; OECD, 2012b). However, while the research findings on staff qualifications and professional development (OECD, 2012a) point out that better educated staff are more likely to provide high-quality pedagogy and stimulating learning environments which, in turn, foster children's development leading to better learning outcomes, inferences about causal links should be made with caution. In fact, results from the reviewed primary research studies (OECD, 2012a) show that there is no simple direct relationship between staff training and children's outcomes but rather that positive effects are the results of multiple factors such as, for example, the design, the content and the delivery of the training.

Similarly, international research reviewed on the impact of staff working conditions (OECD, 2012b) shows a clear link between the staff to child ratio, group size, wages and the quality of ECEC environment, which produces positive effects on children's outcomes. At the same time, however, research findings stress the complex interplay between multiple aspects of working conditions and this makes it difficult to disentangle the effects of each particular characteristic (OECD, 2012b). In this sense, findings from the studies reviewed in the OECD research brief seem to point in different directions, highlighting that no single component of structural quality associated with working conditions has, on its own, a clear impact on children's outcomes.

It would appear that it is the combination of several components related to staff working conditions that, with a different balance in different contexts, improves the quality of ECEC services, and, in turn, leads to positive effects on children's attainments and wellbeing. Therefore, ECEC quality improvements might require to undertake simultaneous actions across multiple structural characteristics, with an understanding of how each structural characteristic has an impact on quality within each system (EC Thematic Group on ECEC Quality, 2014).

Building on this body of research and on consultation with national stakeholders' representatives, the International Labour Organisation published 'Policy guidelines on the promotion of decent working conditions for early childhood education personnel' (2014). By recognising the crucial role exercised by the early childhood workforce in achieving high quality ECEC provision for all, the document underlines that a greater focus should be placed on improving the professional development, status and working conditions of this personnel. As stressed in a recent research overview, the workforce is central to ECEC provision, as it accounts for the greater part of the total cost of early childhood services and is the major factor in determining children's experiences and their outcomes (Bennett and Moss, 2011). For this reason, how ECEC staff are recruited, trained and treated is critical for the quality of early childhood services and for the appropriate inclusion of all children.

To conclude, the EU and the OECD (Council of the European Union, 2011; OECD, 2012a; OECD, 2012b) highlight that improving the working conditions and enhancing the professional development of the ECEC workforce are critical measures to meet the dual challenge of providing an equitable access to services while also promoting improvement in the quality of provision. However, while there is agreement about the ambition to improve ECEC staff working conditions and investing in their professional development, there is no consensus on how to achieve these goals.

Continuing professional development (CPD)

While there is strong evidence to suggest that better educated staff are more likely to provide high quality pedagogy and stimulating learning environments, which, in turn, foster children's development leading to better outcomes (Munton et al., 2002), the ways in which continuing professional development has an impact on children is less well understood. Ongoing professionalization of staff is a key element in guaranteeing children's positive outcomes (Fukkink and Lont, 2007), but it seems clear from research evidence prior to the current review that it is not professional development *per se* that has an impact on children's outcomes.

Research gaps have been identified especially in relation to the design, content and delivery of professional development opportunities as well as in relation to their effective contribution in addressing the current challenges faced by ECEC services. For example, little is known about how various forms of professional development operate and interact to improve the quality of early childhood programmes and children's outcomes (Sheridan et al., 2009; Zaslow et al., 2010).

Working Conditions (WC)

International research on the impact of staff working conditions on children's learning outcomes is not extensive. Furthermore, 'findings do not always point in the same directions' because the complex interplay of the features associated with working conditions make it difficult to disentangle the effects of each particular characteristics (OECD, 2012b). Evidence from literature studies conducted prior to the current review suggested that staff wages are an important

factor in the quality of provision (Huntsman, 2008). Although findings are not totally consistent, it is also suggested that lowering child-adult ratios and reducing group size have some small but significant impact on the quality of interactions between staff and children (Munton et al., 2002; Huntsman, 2008) which in turn have an influence on children's developmental outcomes (Love et al., 2003).

Other aspects of working conditions, such as non-financial benefits, team-work, workload, manager's leadership and physical aspects of the setting/workplace, remain largely underexplored in the research literature (OECD, 2012b).

The role of research evidence

An increasing consensus exists that efforts should be made to develop research evidence that inform policy decision-making process in the educational field in Europe (Gough et al., 2011). The EIPEE (*Evidence Informed Policy-making in Education in Europe*) Project's recommendations in this regards suggest increasing the use of systematic reviews of research in order to 'ensure complete, relevant, quality assured and accessible research evidence' (Gough et al., 2011; p. 10). Such evidence includes evaluation research about which interventions work, and which interventions might work, for whom and in which contexts, as in complex social interventions, such as those acting on complex social systems, effectiveness of policy initiatives is crucially dependent on context and implementation (Pawson et al., 2005). Furthermore, it has been argued that determining 'what works' by relying solely on the measurements of pre-defined outcomes might not necessarily provide the most valid form of evidence in the ECEC field (Vandenbroeck et al. 2012), where multiple stakeholders are involved in decision-making processes at several levels (policy-makers, local administrators, practitioners, children, families and local communities).

Therefore, it is crucial that systematic literature reviews aimed to inform policy decision-making provide explanatory analysis that allow discerning what works for whom, in what circumstances, in what respect and how (Pawson et al., 2005). For this reason, the domain of relevant research also includes qualitative studies of the opinions and experiences of practitioners themselves about the factors characterising their experience of continuous professional development, or working conditions, and about policy initiatives and implementation programmes that attempt to address CPD and working conditions.

Existing systematic reviews

Whilst reviews have been conducted on research on ECEC quality and its relationship to child outcomes (Mitchell and al. 2008; Vandell and Wolfe, 2000), few have focused specifically on the impact of continuing professional development and staff working conditions (Huntsman, 2008; Munton et al. 2002, Zaslow et al., 2010) and fewer still have been systematic (Fukkink and Lont, 2007; Camilli et al., 2010).

Overall, the main limitations of the review evidence to date is that the evidence base in primary studies is limited and frequently not comparable.

First, most reviews to date rely on English language sources only. This means that existing evidence in relation to the investigated topics are produced within contexts which are largely dominated by research agendas typical of English-speaking countries where ECEC provision is generally embedded in liberal welfare state systems (Esping-Andersen, 2002). As the majority of existing reviews on the topics of ECEC staff training and working conditions are located in the US, Australia and New Zealand (Vandell and Wolfe, 2000; Huntsman, 2008; Mitchell et al. 2008; Zaslow et al., 2010; Camilli et al., 2010), and those located in Europe (Fukkink and Lont, 2007; Munton et al., 2002) largely rely on research evidence produced in non-European countries, the relevance of their findings for the European policy contexts might be very limited. This is mainly due to the fact that the context of EU Member States is instead characterised by well-established traditions in the provision of ECEC services which, in most cases, are embedded in publicly funded systems and are building upon pedagogical approaches valuing children's rights and participation. Within such contexts, outcome-focused evaluations of ECEC programmes and targeted interventions, such as those typically found in English speaking countries, are often considered inappropriate or undesirable (Penn et al., 2004). Furthermore the fact that existing reviews have largely relied on searching English language databases might imply that important findings from non-English language sources have been missed.

Second, the contexts within which primary research evidence are produced are historically marked by significant differences in the typology of ECEC settings and provision investigated, making comparison and generalisations problematic. Clear cross-country differences can be observed in, for example, staff training interventions and delivery and governmental regulations regarding staff working conditions (Munton et al., 2002).

The present review: scope and methodology

The present systematic review is explicitly European in orientation. It includes non-English language studies. It is comprehensive in scope, as it goes beyond 'childcare' to include both 'care' and 'education' in its conceptualization. It identifies, so far as is possible from the evidence base, the mechanisms by which professional development, and working conditions, relate to children's outcomes (both cognitive and non-cognitive) as well as to children's learning and socializing experiences. Finally, the review covers all types of primary studies including those both quantitative and qualitative in methodology as well those that employ mixed methods.This report is a systematic review of both these types of evidence (quantitative and qualitative). It examines 'impact studies' which are designed to establish whether or not an intervention works and 'views studies' which use qualitative and other types of methods to study perspectives and experiences of the actors involved. By combining empirical evidence from both 'impact' and 'views' studies, the review aims to enable decision-makers to reach a deeper understanding of interventions linked to staff CPD and WC and how they can be made to work more effectively (Pawson, 2005).

A systematic review is a specialist review technique which employs standardised and explicit methods (Gough et al. 2012; Petticrew and Roberts, 2008). These methods are employed in

order to minimise the risk of drawing the wrong or misleading conclusion from a body of evidence and include searching exhaustively to find all relevant research, assessing the quality of the research and the use of rigorous techniques to synthesise findings.

When study findings are numerical, statistical meta-analysis can be used to synthesise findings. In a review of effectiveness, a statistical meta-analysis pools or aggregates the effect sizes from individual trials (Lipsey and Wilson, 2001; Sutton et al., 2000). Methods for the synthesis of non-numerical findings or qualitative research are emerging and include meta-ethnography (e.g. Campbell et al., 2003), meta-study (e.g. Paterson et al., 2001) and thematic analysis (e.g. Thomas and Harden, 2008). These types of syntheses aim to understand the phenomenon under review from the perspectives of the people being studied and they produce new descriptions, theories or interpretations rather than aggregated effect sizes. Nevertheless it is possible to bring together the findings across a range of data through 'third-level synthesis' that juxtaposes results from controlled trials and qualitative studies by combining them in a matrix (Thomas et al., 2004).

European research traditions

As documented elsewhere (Urban et al., 2011b), ECEC research carried out within EU Member States in relation to the issues explored in the present review refers predominantly to staff professionalization and ongoing improvement of ECEC services by focusing on pedagogical approaches, educational processes and conceptual critiques. Research studies explicitly evaluating the *impact* of staff training and working conditions on children's outcomes are rarer within EU Member States.

Moreover, it is well acknowledged that understandings of childhood, learning, and development are deeply embedded within specific historical, cultural geographical, economic and political contexts, and this also pervades the functions ascribed to ECEC services within society, as well as the image and the status of those who work with young children (Moss, 2000; Oberhuemer, 2010). This is also reflected in the structure of the early childhood education and care workforce that, across EU Member States, takes different connotations depending on the ECEC systems within which services are embedded. Despite these variations in terminology, reflecting the diversity of workforce profiles and ECEC systems across Europe, efforts were made, when establishing inclusion and exclusion criteria for the studies to be reviewed, to allow for the maximum representation of the different situations that are present in EU Member States.

Aims and research questions

Aim:

The overarching aim of the review was to explore links between continuing professional development, working conditions, staff-child interactions (process quality) and children´s outcomes and experiences.

Specific objectives were to:

1. document what constitutes more effective ECEC services and how investing in ECEC workforce contributes towards improving quality;
2. provide evidence on which features of staff working conditions (WC) and continuing professional development (CPD) have a positive impact on pedagogical quality, with a specific focus on children's outcomes and learning/socializing experiences.

The review addressed the following questions:

1. Which features of CPD affect children (their outcomes/wellbeing) and staff-child interactions? Which forms are the most effective?
2. Which features of WC affect children (their outcomes/wellbeing) and staff-child interactions? Which forms are the most effective?

This was achieved by conducting the following syntheses:

1. of quantitative data on the impact of ECEC continuing professional development and working conditions on outcomes for children;
2. of qualitative data describing ECEC staff's views and experiences of continuing professional development and working conditions;
3. of the quantitative and qualitative data to assess the findings of the reviews in relation to one another.

As outlined in section about the role of research evidence, the combined synthesis of evidence drawn from quantitative and qualitative research findings is appropriate to provide decision-makers with information that allows to discern which interventions might work for whom and in which circumstances, in respect to complex social interventions such as those in focus within the present review (Pawson et al., 2005).

Methods: mapping exercise and in-depth review

This chapter presents a brief summary of the methods of the review. Further details can be found in the review protocol (Hauari et al., 2014) and in the appendices of this report.

Inclusion and exclusion criteria

To be considered for inclusion within this review, studies were required to meet pre-specified eligibility criteria. Studies were included if they were undertaken on formal ECEC provision in the 28 EU Member States and published after 1991, following the publication of *Quality in Services for Young Children* (EC Childcare Network, 1991). The focus also had to be on ECEC professionals and children aged 0-7 years old and studies were required to focus on at least one of the two key areas of the review:

a) CPD AND ECEC quality OR children's learning outcomes and experiences, including staff child interactions.
b) Staff working conditions AND ECEC quality OR children's learning outcomes and experiences, including staff child interactions.

The eligibility criteria also specified that only primary empirical research, both quantitative and qualitative, would be included e.g. evaluation studies that measured impact or views studies reporting perceptions of participants through interview, where views are presented as data e.g. direct quotes from participants or description of findings.

Quality of ECEC was not included in the criteria initially set out in the protocol. The senior researchers who knew the literature on CPD and WC in Europe feared that there were not enough studies in Europe published on the relation between CPD, WC and child outcomes or staff-child interaction. Whereas evaluation studies examining the impact of ECEC interventions on child outcomes and staff-child interaction might be more common in English-speaking countries outside the EU (such as the United States and Australia), European literature tends to investigate the effects of CPD and WC within a broader perspective. Such a perspective would focus on the effects of CPD and WC on ECEC quality and its associated features, among which practitioners' competence (knowledge, practices and understandings) would be an important component. As the relation between ECEC quality and child outcomes is acknowledged and widely accepted in international research in this field, the core team decided to add quality as a reported outcome.

Search methods for identification of English language studies

Searches were conducted using a two-pronged approach with the core team conducting searches for English only studies and the national experts searching for non-English studies. The core team, using a sensitive search strategy, identified relevant key terms and organised searches using comprehensive search strings on nine international electronic bibliographic databases. The results were uploaded into the software "EPPI-Reviewer" for screening (Thomas, Brunton, Graziosi, 2010).

The second approach was a more focused search conducted by national experts in all 28 European Member States in their respective native languages using relevant translated key terms; more details on this process are described below. Databases and specialist websites were also searched selected to capture as many potentially relevant studies as possible. Non-indexed publications or grey literature were also sourced by the core team on EC websites (DG Education and Culture, DG Employment and DG Justice), on Eurydice Database and on OECD/Directorate for Education and Skills (with particular reference to the materials produced by the Network on Early Childhood Education and Care). In addition to this, reference lists were also scanned for relevant studies. Full details of the search strategy and sources can be found in Appendix 1.

Table 2.1 Databases searched by core team

International databases
ASSIA (Applied Social Science Index and Abstracts)
British Educational Index
Child Data
ERIC
IBSS (International Bibliography of the Social Sciences)
PsycInfo
SCOPUS
Sociological Abstracts
SSCI/Web of Knowledge
Specialist libraries
OECD
EURYDICE
European Commission

Search methods for identifying non-English language studies

Searches for the studies published in languages other than English were conducted by national experts in all 28 European Member States, in collaboration with the nominated members of the core team. The core team prepared detailed guidelines for the national experts outlining the search strategy, search terms and the main objective of the current review. National experts were asked to translate the search terms into their native languages by producing a glossary of key-terms. Where necessary, the core team followed up with e-mails and Skype calls to ensure that all involved understood the search process. National experts conducted searches in national databases, including national libraries and university catalogues, and institutional websites searching for grey literature. National experts also conducted manual searches of journals or scientific reports where database searches returned no results, or where no relevant

databases were identified. Each national expert was required to deliver to the core team a country report including four sections:

1. the glossary of key-terms used for combined searches
2. a detailed list of search sources[1]
3. a list that accurately reported the output of searches[2]
4. a final section reporting experts' remarks in relation to the state of the art in their country concerning the topic of the systematic review and its place in the national policy debate[3].

National experts applied the same eligibility criteria to screen non-English studies using Excel sheets provided by core team researchers and all the titles and abstracts of potentially relevant studies translated into English were uploaded into EPPI-Reviewer. Members of the core team then double screened these to verify their inclusion. In both approaches, where two researchers could not agree on the inclusion or exclusion of a study, the matter was referred to the wider team for discussion and a consensus reached.

From mapping to in-depth review

All studies meeting the eligibility criteria were mapped to capture descriptive details such as study population, aims, study design, outcomes reported and themes arising from the qualitative studies. This process enabled the team to familiarise themselves with the included studies and further refine the inclusion criteria for the in-depth review. The mapping exercise identified a number of quantitative studies that did not measure the impact of CPD and working conditions and these were subsequently excluded from the review at this point. To be included in the in-depth review, views studies had to examine professionals' views on CPD and/or WC and elicit views about their impact on quality and child outcomes.

Data extraction

Data extraction of studies meeting the eligibility criteria was carried out using a framework specifically developed for this review. The framework was used to extract information from each study including descriptive details of the WC or CPD studied, study aims and rationale, population studied, methods of sampling, recruitment, data collection and analysis. For

[1] More specifically, national experts were required to compile a list the search sources comprising three sub-sections: national databases, institutional web-sites publishing research reports and grey literature, academic journals.

[2] National experts were required to report in regard to each source reported in the output section: the full reference of the article/report and the translation of title and abstract into English.

[3] These materials for each of the 28 EU Member States are available on request from Eurofound. It was not possible to include them in Appendices due to length. However, national experts' remarks in relation to the state of the art have been used for contextualising the findings of mapping results (see s. 3.1).

qualitative studies, also participants' quotations were extracted, followed by, and distinguished from, authors' descriptions and analyses of participants' views. The framework was applied to English language studies by the core team using the software EPPI-Reviewer 4, whilst the national experts conducted data extraction on non-English studies using the same framework, but in Excel.

National experts carefully reviewed the full documents and compiled the Excel tables to the highest degree possible resembling the structure of the data extraction framework used by the core team in EPPI-Reviewer 4. All the relevant information for each code available in the study was summarised by national experts and translated into English. In addition, up to two rounds of clarifications (by telephone, Skype and email) took place before the data extraction templates in Excel were finalised.

A summary of data extracted for the individual views studies is presented in Appendices 4-7. A summary of the characteristics and methodology of the impact studies is presented in chapter 4.

Quality assessment

The procedures and criteria used for assessing methodological quality were adapted from existing tools used in other systematic reviews (Shepherd et al., 2010; Harden et al., 2004 and 2009) and can be found in Appendices 2 and 3. Methodological quality assessments were conducted as part of the overall data extraction process. Quantitative studies were independently assessed for risk of bias using a tool adapted from Shepherd et al. (2010). Criteria included assessment of:

- selection bias; refers to systematic differences between baseline characteristics of the groups that are compared;
- detection bias; refers to systematic differences between groups in how outcomes are determined;
- attrition bias; refers to systematic differences between groups in withdrawals from a study;
- selective reporting bias; refers to systematic differences between reported and unreported findings.

The quality and methodological rigour of views studies was assessed using a tool developed at the EPPI-Centre (Harden et al., 2009), which considers whether the findings are grounded in the data and reflects study participants' views. Studies were assessed according to six criteria that assessed studies according to:

1. Were steps taken to increase rigour in the sampling?
2. Were steps taken to increase rigour in the data collected?
3. Were steps taken to increase the rigour in the analysis of the data?
4. Were the findings of the study grounded in/ supported by the data?
5. Please rate the findings of the study in terms of their breadth and depth
6. To what extent does the study privilege the perspectives and experiences of participants/ECEC professionals?

Studies were then rated in terms of usefulness and reliability. To be judged as high in the 'reliability' category studies needed to answer at least *several* or *fairly* on all criteria[4]. Studies judged high in terms of their 'usefulness' needed to be coded *well-grounded* in criterion 4; *Good/ fair breadth and depth or little depth* in criterion 5 and *a lot* or *somewhat* in criterion 6 (See description of quality assessment in Appendix 2 and 3 for more details).

Data synthesis

Quantitative synthesis

The core team decided that, in the framework of the limited duration of the project and given the challenges encountered in retrieving detailed data from the impact studies written in languages other than English, a meta-analysis was not possible. Therefore the research team conducted a thematic summary of the impact studies' findings.

In addition, the findings of impact studies were synthesised by systematically relating the components of CPD interventions and WC studied to the outcome reported (ECEC quality, staff-child interactions and children's outcomes). This allowed identification of patterns in regards to the components of CPD and WC that are most frequently associated with certain outcomes studied (either ECEC quality or staff-child interaction or children's outcomes) and to identify existing research gaps.

[4] A. Yes, a (fairly) thorough attempt was made (specify) or B. Yes, several steps were taken (specify)

Qualitative synthesis

Methods for synthesis of views built on those developed by the EPPI-Centre (Harden et al., 2004; Thomas and Harden, 2008). Studies of participants' views were synthesized using framework synthesis[5] (Barnett-Page and Thomas, 2009; Oliver et al., 2008) based on methods from primary qualitative research (Spencer and Ritchie, 2002). Verbatim quotes from study participants and author descriptions of findings were extracted from the results sections of included studies and organised into broad themes to capture the meanings of the data. Themes were grouped and condensed, where possible, to produce higher-order themes containing a set of more specific sub-themes (Thomas and Harden, 2008). Themes were used to address review questions and to develop hypotheses about factors related to ECEC staff working conditions and professional development and the impact on quality and child outcomes.

[5] Qualitative research produces large amounts of textual data in the form of transcripts, observational field notes etc. This poses a challenge for rigorous analysis. Framework synthesis offers a highly structured approach to organizing and analyzing data. It utilises an a priori framework – informed by background material and team discussions - to extract and synthesise findings (Barnett-Page and Thomas, 2009).

Mapping results: description of studies

Contextualisation of mapping results

The framing of the research question on *effectiveness* and *impact* had consequences for the inclusion of studies across all European research traditions. As noted, most non English language studies in the field of ECEC institutions and workforces have their origins in paradigms of local pedagogical traditions and cultures of childhood rather than within an evidence-based paradigm assuming effectiveness of interventions at its core. While a rich body of scholarly research and grey literature exists in relation to the theoretical conceptualisation of CPD approaches as well as in relation to the description of locally developed practices (Urban et al., 2011b), empirical studies aimed to systematically evaluating the effectiveness of CPD interventions are extremely rare in EU Member States. A six-country study carried out within the framework of the German WiFF initiative[6] highlighted the lack of nation-wide research and evaluation as a weakness of the CPD systems across countries (Oberhuemer, 2012). On the other hand, studies on the effectiveness of different structural quality components linked to staff working conditions might be more common in large scale cross-national comparative evaluations rather than in within-country research unless the implementation of specific policy interventions is to be evaluated.

Furthermore, the governance structure within which ECEC is provided might indirectly have an effect on the available research. National experts who provided data from non-English language Member States also provided contextual material on the state of the art of research in their own country. From this material it emerges that in contexts where ECEC is provided within a split system (OECD, 2006) research on workforce issues tends to be carried out within an integrated framework for pre-primary and primary professionals while the same issues are often neglected in relation to services for children under three. There were consequences for the inclusion of certain studies in the current review. For example, studies where the effects of training interventions could not be disentangled for each category of educational professional (pre- and primary teachers) had to be excluded from mapping and in-depth review as they did not provide evidence on the targeted group of professionals (e.g. in the case of Spain and Italy this aspect was particularly salient). In addition, few studies focused on professionals working with children aged 0-3 years. In other cases, the lack of national frameworks orienting ECEC policies and research might hinder the development of scholarly literature in this field, which tends to be limited and highly fragmented (as reported for example by the Austrian national expert).

[6] The nation-wide initiative WiFF (*Weiterbildungsinitiative Frühpädagogische Fachkräfte*), funded by the German Federal Ministry of Education and Research and the European Social Found, examined the structures, content and quality of CPD in the early childhood sector across EU Member States. The findings draw on the cross-national analysis of six country case studies of CPD systems: Denmark, England, Hungary, Italy, Slovenia and Sweden.

More specifically, the analysis of country research reports revealed three main patterns:

a) Countries displaying a copious body of literature on issues regarding ECEC staff professionalization, but in which empirical research is mostly designed within a pedagogical value-oriented framework and reported in the form of thick process description rather than in the form of outcome evaluation. In this regards France is the most striking example, followed by Denmark and Italy. This pattern is frequently associated with a scarce body of literature on staff working conditions that might be determined by the fact that in such systems ECEC provision is embedded in long-established public policies that are tightly regulating working conditions and structural quality characteristics. For example, the Slovenian report states that research examining the effect of structural indicators on children's outcomes might be scarce as public ECEC provision has to conform to binding legal requirements. Whereas the Finnish report highlights that research investigating the influence of staff working conditions on children's outcomes tend to be rare as children's development is evaluated mostly in terms of well-being and a participatory/democratic approach to quality improvement, which engages staff, parents and children, is seen as more appropriate.

b) Countries in which a growing body of research on ECEC quality, encompassing impact evaluations of staff professionalization and working conditions, is gradually emerging as consequence of recent policies' focus and educational reforms. The Portuguese report, for example, stresses that scholarly literature in the educational field has developed enormously in recent years as a result of investment in research, resulting in an increase in the number of Doctorates and funded projects. In the case of Germany, major research initiatives focusing on issues on staff professionalization and working conditions have been triggered by current policy debate. After putting much effort into the quantitative expansion of ECEC provision, federal policies are now focusing on the issue of quality. Regional differences (e.g., with regard to staff:child ratio or ECEC management) present a major concern and have triggered debates and initiatives to advance nation-wide quality standards and regulations.

c) Countries in which research on ECEC in general, and on CPD and/or working conditions in particular, are scarce due to a lack of public investment in the early childhood sector. National expert reports from Greece, Cyprus and Hungary all document this scarcity. Lack of research on these issues may also be motivated by the fact that countries are still facing a transition phase in establishing ECEC systems at national level (e.g. Latvia and Poland). Finally, in some countries scholarly literature grounded in empirical research is rare within the ECEC field in general and even more so in relation to staff professionalization issues (e.g., Lithuania, Czech Republic, Estonia)

These features of ECEC services and the variable level of ECEC research across EU Member States establish that findings from a review of the effectiveness of CPD and WC in relation to children's outcomes are likely to be weighted toward countries with certain research and

practice traditions. Moreover, in most countries research on services for very young children is rather under-represented, and studies of family day-care related to CPD and WC was virtually nonexistent.

Identification of relevant studies

Identification of relevant studies was carried out using two parallel processes; one for English language sources and one for non-English sources. The search strategy for English sources identified a total of 24,961 records. Figure 3.1 describes the flow of these records through the two stage screening process; stage one based on information contained in the title and abstract and stage two on the full text of the study. After removing 5,587 duplicate records 19,452 records remained for screening.

Concerning English language sources, screening at title and abstract was carried out on 13,670 (70%) within the time scale of the review. Although not all records were screened, using an innovative functionality in the EPPI-Reviewer system called 'priority screening' (Miwa, Thomas , O'Mara-Eves, Ananiadou, 2014), which 'pulls' the relevant studies towards the beginning of the screening process and 'pushes' the irrelevant ones towards the end, we are confident that the majority of relevant records were identified and screened accordingly. Priority screening works through an iterative process whereby the accuracy of the predictions made by the database are improved as screening progresses. When used in a review it involves the reviewer screening a small number of studies manually; the machine then 'learns' from these decisions and generates a list of citations for the reviewer to look at next. This cycle continues, with the number of reviewer decisions growing, until a given stopping criterion is reached and the process ends.

The majority of studies excluded at the title and abstract stage were because they did not meet criterion 4; that is they were either not from a European member state or were not about CPD or working conditions and their impact on ECEC quality, staff child interactions or children's learning outcomes and experiences (n=7920, 60%). A further 4,927 (36%) studies were excluded because the population studied were not ECEC professionals and/or children aged 0-7 years (criterion 2). At this stage, 294 studies were included for retrieval and full text screening. Full reports were retrieved and screened for 281 (96%) of the 294 citations identified at the title and abstract screening stage. Only 13 citations were unavailable and out of the 281 full texts screened 86% were excluded, of which nearly half were excluded because they did not meet the focus of the study (criterion 4). A total of 39 study reports were thus deemed relevant and included in the next stage of the review, the mapping exercise.

The search strategy among non-English sources available in EU28 identified 1,551 records (See Figure 3.2). No articles satisfying key search terms were identified in Luxembourg and Malta. Based on screening on the title and abstract (for which the same criteria were used as for the English language sources) 173 studies (out of 1,551) were identified as potentially relevant for the review. At the title and abstract stage no articles from Cyprus, Greece, Czech Republic, Latvia, and Estonia were further included into the screening process. A further 146 studies were excluded at the full text screening stage because they did not satisfy inclusion criteria. In Austria,

Bulgaria, France, Hungary, Lithuania, Netherlands, Romania and Slovakia no relevant articles were found at the full text screening stage[7]. As a result, 27 non-English articles from Belgium, Croatia, Denmark, Finland, Germany, Italy, Portugal, Poland, Slovenia, Spain and Sweden were included in the next stage of the review, the mapping exercise.

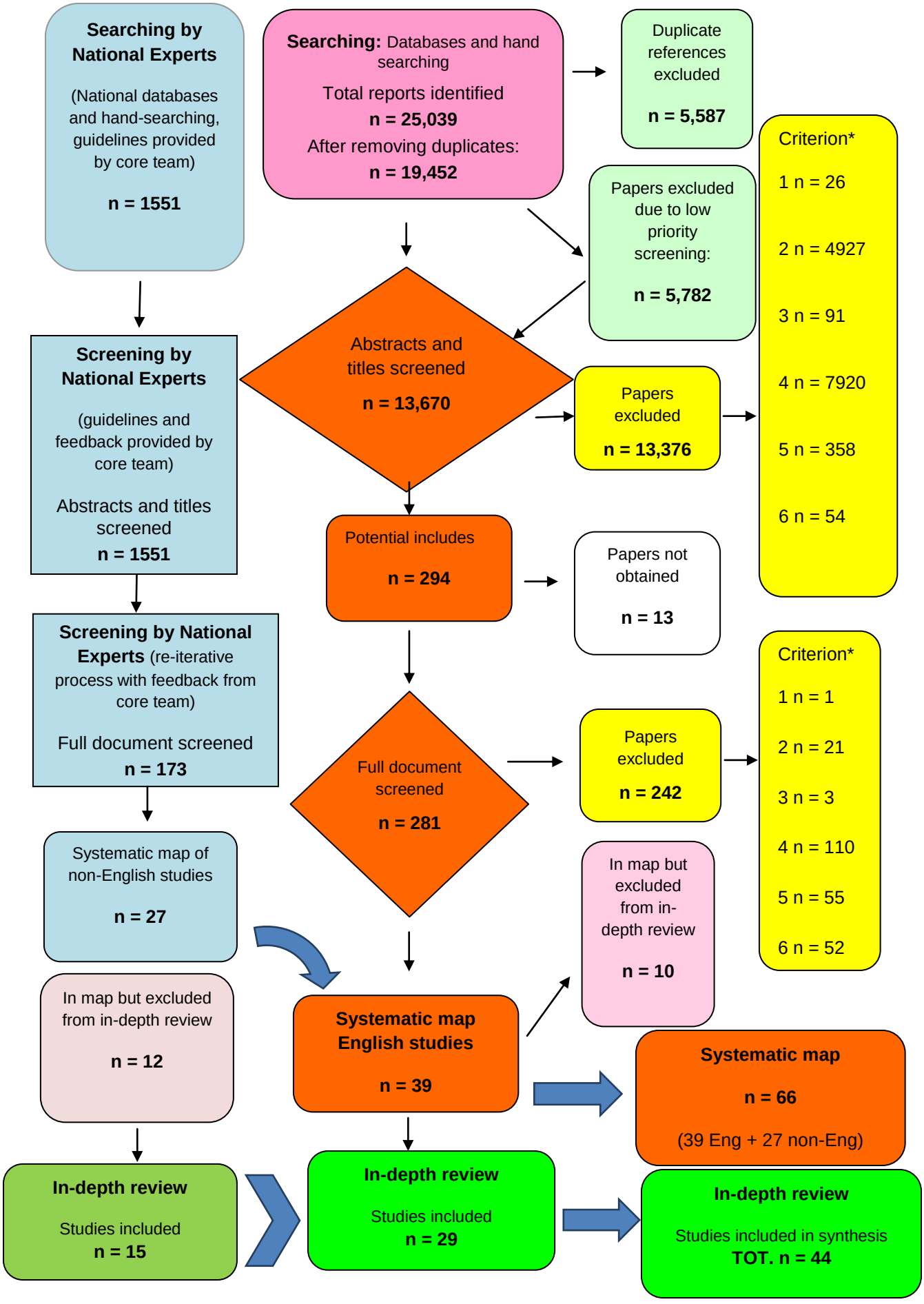
Quality appraisal was carried out by two reviewers on each study included in the map for both English language and non-English sources. Quantitative studies and qualitative studies were assessed according to different criteria in relation to their study design. Mixed methods studies were split into quantitative and qualitative elements and each was assessed according to pertinent criteria. The quantitative part of mixed-methods studies was assessed against the criteria set for impact studies while the qualitative part was assessed against the criteria set for views studies. The quantitative studies were included if they were controlled before-and-after study design ('a study in which observations are made before and after the implementation of an intervention, both in a group that receives the intervention and in a control group that does not' (Reeves et al. 2008, p. 13.2)) or a randomised controlled trial ('a study in which people are allocated at random (by chance alone) to receive one of two or more interventions. One of these interventions is the standard of comparison or control' (Oliver et al. 2010, p. vii)). Randomisation is a technique that alone reduces the variation in effect size and is recommended for evaluating policy interventions (Oliver et al., 2010).

However, due to the low number of studies of working conditions, three studies were included that did not meet this threshold (no control group) but were the most robust studies available and rated as sound despite discrepancy with the quality criteria. These were studies with large numbers of participants or were longitudinal in design. Studies not meeting these criteria were excluded from the in-depth synthesis, along with those judged 'not sound' according to quality criteria provided in the section about the quality assessment on p. 11. Qualitative studies were each allocated a 'weight of evidence' with two dimensions rating reliability and usefulness of reported findings. Views studies that were rated 'low' on both dimensions were excluded from in-depth review. More details about the quality appraisal can be found in the section on p.11 and in Appendix 2 and 3.

Qualitative studies were each allocated a 'weight of evidence' with two dimensions rating reliability and usefulness of reported findings. Views studies that were rated 'low' on both dimensions were excluded from in-depth review. More details about the quality appraisal can be found in the section p.11 and in Appendix 2 and 3.

[7] The screening process – both at title and abstract stage and at full-text stage – was carried out by country experts supervised by core team researchers. As this process was not carried out in EPPI-Reviewer4, figure 3.1 reports only the outcome of this process (see left column in the graph), without detailing the number of non-English language sources that were excluded for each criteria.

Figure 3.1 Flow diagram showing stages of selection of relevant sources for English and non-English language studies



Characteristics of the included studies (systematic map)

Full reports of relevant studies published in English language were retrieved and coded in EPPI-R4 based on and adapted from a standardised tool based on a key wording system developed by the EPPI-Centre (Peersman and Oliver, 1997). Similarly, full reports of relevant studies published in languages other than English were retrieved by country experts and coded in English by compiling Excel tables provided by the core team and using the same codes as that used for mapping in EPPI. In total 66 studies were included in the systematic map: 39 (59%) were published in English language while 27 (41%) were published in languages other than English.

Based on information contained in the full text of the study reports, studies were classified according to study type and design; country where the study was conducted; the focus of the intervention (i.e. CPD or working conditions; research participants; the early years provision setting). Furthermore, impact studies were classified according to the type of training intervention and working condition investigated in relation to the outcomes measured. Views studies were classified according to the type of CPD or WC studied in relation to the perceived effects on practitioners' (knowledge, practices, understandings) and on staff-child interactions as well as on observed children's learning and socialising experiences. This mapping of relevant studies enabled a rich description of the research literature based on the description of study characteristics that are presented below. Table 3.1 outlines the studies included in the mapping phase of the review.

Table 3.1 Overview of studies by country, author, focus and study design (n = 66)

Country	Study ID	Intervention studied	Study design
Portugal	Almeida (2012)	WC	QUANTITATIVE
	Cardoso (2012)	CPD	QUALITATIVE
	Craveiro (2007)	CPD	MIXED-METHOD
	Leal (2011)	CPD	QUALITATIVE
	Lino (2005)	CPD	MIXED-METHOD
	Peixoto (2007)	CPD	QUALITATIVE
	Quaresma et al. (2011)	CPD	QUALITATIVE
	Oliveira-Formosinho and Araújo (2004)	CPD	QUANTITATIVE
	Oliveira-Formosinho and Araújo (2011)	CPD	QUALITATIVE
United Kingdom	Ahsam et al. (2006)	CPD	MIXED-METHOD
	Ang (2012)	CPD	QUALITATIVE
	Aubrey et al. (2012)	CPD	QUALITATIVE
	Blatchford et al. (2001/2002)	WC	MIXED-METHOD

Country	Study ID	Intervention studied	Study design
	Blenkin and Hutchin (1998)	CPD	QUALITATIVE
	Jopling et al. (2013)	CPD	QUALITATIVE
	Menmuir and Christie (1999)	CPD	QUALITATIVE
	Potter and Hodgson (2007)	CPD	QUALITATIVE
	Wood and Bennett (2000)	CPD	QUALITATIVE
Ireland	Bleach (2013)	CPD	QUALITATIVE
	Duffy (2007)	CPD	MIXED-METHOD
	Hayes et al. (2013)	CPD and WC	MIXED-METHOD
	McMillan et al. (2012)	CPD	QUALITATIVE
	O'Kane (2005)	WC	QUANTITATIVE
	Rhodes and Hennessy (2001)	CPD	QUANTITATIVE
	Share et al. (2011)	CPD	QUALITATIVE
	SQW (2012)	CPD	QUALITATIVE
Sweden	Asplund Carlsson et al. (2008)	CPD	QUALITATIVE
	Johansson et al. (2007)	CPD	QUALITATIVE
	Palmerus (1996)	WC	QUANTITATIVE
	Rönnerman (2003)	CPD	QUALITATIVE
	Rönnerman (2008)	CPD	QUALITATIVE
	Sheridan (2001)	CPD	QUANTITATIVE
	Sheridan et al. (2013)	CPD	QUALITATIVE
	Sundell (2000)	WC	QUANTITATIVE
Germany	Beller et al. (2007/2009)	CPD	QUANTITATIVE
	Buschmann and Jooss (2011)	CPD	QUANTITATIVE
	Evanschitzky et al. (2008)	CPD	QUANTITATIVE
	Richter (2012)	CPD	MIXED-METHOD
	Simon and Sächse (2011)	CPD	QUANTITATIVE
	Tietze et al. (2013)	WC	QUANTITATIVE
	Wächter and Laubenstein (2013)	CPD	QUALITATIVE
	Franco Justo (2008)	CPD	QUANTITATIVE
	Lera (1996)	WC	QUANTITATIVE

Country	Study ID	Intervention studied	Study design
Spain	Ruíz de Miguel and García (2004)	WC	QUANTITATIVE
	Pineda et al. (2011)	CPD	MIXED-METHOD
	Sandstrom (2012)	WC	MIXED-METHOD
	Alsina i Pastells and Palacios (2010)	CPD	QUALITATIVE
Netherlands	De Roos et al. (2010)	CPD	QUALITATIVE
	Fukkink and Tavecchio (2010)	CPD	QUANTITATIVE
	Van Keulen (2010)	CPD	QUALITATIVE
Belgium	Peeters (1993)	CPD	QUALITATIVE
	Peeters and Vandenbroeck (2011)	CPD	QUALITATIVE
	Vandenbroeck et al. (2008/2013)	CPD	QUANTITATIVE
Finland	Happo et al. (2012/2013)	CPD and WC	QUALITATIVE
	Venninen (2007)	CPD	MIXED-METHOD
Italy	Picchio et al. (2012)	CPD	QUALITATIVE
	Pugnaghi (2014)	WC	QUANTITATIVE
Slovenia	Pačnik (2009)	CPD	QUANTITATIVE
	Vonta et al. (2007)	CPD	QUALITATIVE
Croatia	Glavina and Sindik (2012)	CPD	QUANTITATIVE
	Vujičić (2008)	CPD	QUALITATIVE
Denmark	Jensen et al. (2013)	CPD	QUANTITATIVE
Poland	Andrzejewska (2011)	WC	QUANTITATIVE
Greece	Rentzou and Sakellariou (2011)	WC	QUANTITATIVE
Cross-national	Cryer et al. (1999) Montie et al. (2006)	WC	QUANTITATIVE

Of the 66 reports describing studies relevant to exploring the effects of CPD and working conditions, 25 (38%) were classified as quantitative studies, 31 (47%) were classified as qualitative ones and 10 (15%) as mixed methods, offering both quantitative and qualitative data. For the purpose of mapping the characteristics of existing literature in the field, the characteristics of quantitative studies and qualitative studies are described separately in the sections below, while information from mixed-methods studies are reported in each of the two sections as they have been split in quantitative and qualitative parts.

Overall, out of 66 studies included in mapping, 50 (76%) focus on continuing professional development, 14 (21%) focus on working conditions while two (3%) studies investigate issues related to both CPD and WC. All mapped studies were carried out in EU Member States. Two cross-national comparative studies were included (3%). Both comparative studies report findings on structural quality components that are related to working conditions: Cryer et al. (1999) involves the USA along with three EU countries (Germany, Portugal, Spain), while Montie et al. (2006) illustrates the results of the IEA Pre-Primary project that was carried out in 10 countries (Finland, Greece, Hong Kong, Indonesia, Ireland, Italy, Poland, Spain, Thailand, and the United States). In addition, nine (14%) studies were conducted in Portugal and in the United Kingdom, eight (12%) in the Republic of Ireland and in Sweden, seven (11%) in Germany, six (9%) in Spain, three (5%) in the Netherlands and in Belgium, two (3%) in each of Finland, Italy, Slovenia and Croatia while only one included study was carried out in Denmark, Poland and Greece.

Quantitative studies

The section below describes the characteristics of 35 studies reporting quantitative findings derived from quantitative and mixed-methods research. Two linked studies from UK (Blatchford et al., 2001 and Blatchford et al., 2002) as well as two linked studies from Germany (Beller et al, 2007 and Beller et al., 2009) and from Belgium (Vandenbroeck et al, 2008 and Vandenbroeck et al, 2013) have been counted as one study each in the report as they evaluate the same intervention. Of the 35 studies described, only fourteen (40%) were included in the in-depth review. Over half of the studies (n=21, 60%) reporting quantitative findings were excluded from the in-depth synthesis either on the basis of research design (not Controlled Trial or Before and After study) or on the basis of methodological rigour ('soundness of the study') assessed at the quality appraisal stage.

Country

Table 3.2 shows that the majority of studies evaluating the effects of CPD interventions and working conditions on quality, staff-child interactions or children's outcomes were conducted in Germany (n=6, 17%). Five were from Spain (14%); four from Portugal and Ireland (11%); three from Sweden (9%); two from UK (6%); with Belgium, Croatia, Denmark, Finland, Greece, Italy, Netherlands, Poland, Slovenia and two comparative studies equally accounting for 32% of the studies.

Table 3.2 Country in which studies were conducted (n = 35)

Country	N	Of which n were mixed method studies
Germany	6	1
Spain	5	2
Portugal	4	2

Country	N	Of which n were mixed method studies
Ireland	4	2
Sweden	3	0
United Kingdom	2	2
Belgium	1	0
Croatia	1	0
Denmark	1	0
Finland	1	1
Greece	1	0
Italy	1	0
The Netherlands	1	0
Poland	1	0
Slovenia	1	0
Cross-national comparative	2	0

Publication date

Although only studies published after 1991 were sought for inclusion in this review, the majority of studies (n=31; 89%) included were not published until at least 10 years after the publication of *Quality in Services for Young Children* (EC Childcare Network, 1991) (which was used as the starting point), with 63% published between 2007 and 2014 (Table 3.3).

Table 3.3 Studies by publication date (n=35)

Date	N	Of which n were mixed method studies
1991 – 1993	0	0
1994 – 2000	4	0
2001 – 2006	9	3
2007 – 2014	22	7

Study design

The quality of reporting in terms of methodology varied greatly across the studies rendering classification by study design problematic. Whilst originally, a total of 34 studies described evaluating the impact of working conditions or CPD on either quality, staff-child interactions or

child outcomes, upon closer inspection of the full text it became apparent that many were not 'intervention studies' and did not adopt an evaluation design method.

European studies using experimental research design involving randomisation of intervention and control/comparison group(s) to evaluate interventions are rare in this field of study (Table 3.4). Only two studies out of 35 (6%) reported using a Randomised Control Trial design. One of these was conducted in Denmark and one in Ireland. The first study evaluated a training intervention only, while the latter evaluated an intervention including both staff training and working conditions.

Thirteen studies of 35 (37%) adopted a Before and After research design, using measures at baseline and a period after the intervention in order to evaluate change over time. Of the 13 Before and After studies, five evaluated training interventions carried out in Germany while three studies carried out in Sweden focused on training (n=2) and working conditions (n=1). Of the five remaining Before and After studies, one was a linked study conducted in the UK with a focus on staff working conditions, one was a linked study from Belgium evaluating the impact of CPD and three were evaluating CPD interventions carried out in Ireland, Netherlands and Spain.

More than half of the studies (n=20, 57%) either did not specify the evaluation design or described other designs (e.g., cross sectional surveys, comparative designs) which did not necessarily evaluate impact (Table 3.4). This suggests that there is paucity of reliable evidence about the effects of CPD and working conditions on ECEC quality, staff-child interactions and children's outcomes.

Table 3.4 Studies by design (n=35)

Study design	N	Of which n were mixed method studies
Randomised Controlled Trials	2	1
Before and After Evaluations	13	2
Other study designs	20	7

Interventions studied and outcomes reported

Quantitative studies were predominantly evaluating CPD interventions only (n=20), with one study carried out as Randomised Controlled Trial and ten being Before and After studies. Only one study focused simultaneously on CPD and WC and this was an RCT. The remaining studies (n=14) focused on WC, of which three adopted a Before and After evaluation design.

Table 3.5 Type of interventions studied (n=35)

Intervention	N	Of which n were mixed method studies
Only CPD	20	7
Only WC	14	2
CPD and WC	1	1

In relation to both interventions (CPD and working conditions), the studies included in the review measured outcomes relating to: ECEC quality, staff-child interactions and children's cognitive/non-cognitive outcomes.

Type of CPD interventions studied and outcomes reported

Studies described evaluating a range of CPD interventions/training some of which involved multiple components. Continuing professional development, as described in the studies was categorised according to training instructional characteristics broadly referring to its delivery, scope and duration (Table 3.6).

More than two-thirds of the quantitative studies evaluating CPD interventions (n=15 of 21) investigated the effects of training programmes which were integrated into practices in ECEC settings. Such programmes were carried out either in the form of 'on-site training' (e.g., in-house professional development) or in the form of 'off-site training with follow up activities in the centre' (e.g., a combination of lectures and workshops followed by sessions in which practitioners reflect on practice). More than half of the studies evaluating CPD interventions (n=12 of 21) encompassed follow-up activities in the ECEC settings, such as coaching or supervision (such as feedback and reflection on practices).

Most CPD interventions evaluated in quantitative studies (n=13 of 21) focused broadly on various topics related to ECEC practices (broad scope) rather than on specific subject-areas (narrow scope) and in one case the scope of CPD intervention was not clearly defined within the study.

There was variation in terms of the duration of CPD interventions studied. These ranged from four day intensive sessions to two year programmes. However, it is remarkable that in one third of the studies evaluating CPD interventions (n=7 of 21), the duration of training in terms of length of the programme and/or number of session delivered is not clearly specified.

Table 3.6 Type of CPD studied: instructional characteristics (n=21)

CPD			N	Of which n MM
Delivery	Training integrated into ECEC centres' practices (onsite training or combination of off-site training and follow up activities)	With coaching / supervision (feedback)	12	3
		Without coaching / supervision	3	2
	Training not integrated into ECEC centres' practices		3	1
	Not stated / unclear which type		3	2
Scope	Broad scope	Courses covering various topics	13	5
	Narrow scope	Courses with specific focus	7	2
	Not stated / unclear which type		1	1
Duration	Less than six months		4	1
	Six months to one year		5	1
	More than one year		5	0
	Not clearly specified		7	6

The effects of CPD interventions on children's cognitive and non-cognitive outcomes were examined in nearly half of the studies (10 of 21), with findings related to cognitive outcomes (language abilities in particular) being reported in nine of these 21 studies. The effects of CPD interventions on ECEC quality (including accessibility for low-income and ethnic minority families) were investigated in six studies. Five of these six studies used internationally validated rating scales, such as ECERS (Harms and Clifford, 1998), PIP (High-Scope, 1995) and PQA (High-Scope, 2003), for measuring the effects of CPD interventions on the quality of ECEC settings. Only one study looked at the effects of CPD on ECEC services accessibility: in this case the impact of training was measured by relating enrolment rates of children from low-income and ethnic minority families to the places available before and after the intervention was carried out. The effects of CPD on staff-child interactions were examined in six studies (of 21), which used as measurement tools rating scales, such as CIS (Arnett, 1989) or Child Involvement and Adult Engagement Scales (Laevers, 1994), and structured observation protocols recording verbal and/or non-verbal interactions between staff and children. Lastly, in two of eight mixed-methods studies investigating the effects of CPD, outcomes were not clearly stated in relation to quantitative findings.

Table 3.7 Outcomes reported in relation to CPD interventions (n=21)

Outcomes measured	Tool used for measurements	N	Of which n were mixed method studies
ECEC quality	ECERS	2	1
	PIP rating scale	2	2
	High Scope PQA tool	1	1
(accessibility)	Availability/Enrolment rates	1	0
Staff-child interaction	CIS	3	1
	Structured observation protocols	2	1
	Child Involvement and Adult Engagement Scale	1	1
Children's outcomes	Cognitive and social abilities standardised assessment	3	1
	Cognitive abilities test only	6	1
	Social abilities test only	1	0
Outcomes and measurement tools not clearly stated		2	2

Note: Studies could measure more than one outcome

Working conditions studied and outcomes reported

Quantitative studies on working conditions were predominately 'non-intervention' studies, but studies which sought to evaluate the influence of structural factors, such as staff:child ratio, group size, in-service training, working hours allocation and wages, on process quality and children's outcomes.

Most studies investigating working conditions (n=10 of 15) examined more than one structural variable at the time, with staff:child ratio and group size being the most studied variables, featuring in over half the studies. Of the 15 quantitative studies evaluating the effects of working conditions, the allocation of working hours (including the availability of non-contact time) was investigated in five studies, the provision and/or attendance of in-service training was examined in four studies and staff wages in three studies. The less studied variables were turnover and career progression, which were investigated in one study each.

Table 3.8 Type of Working conditions studied (n=15)

Working condition	N	Of which n were mixed method studies
Staff: child ratio	11	3
Group size	9	2
Working hours allocation	5	1
In-service training	4	1
Wages	3	0
Turnover	1	0
Career progression	1	0

Note: Studies could investigate more than one structural variable.

Eight studies (of 15) investigated the effects of working conditions on ECEC quality as measured through rating scales, such as ECERS (Harms and Clifford, 1998), CLASS (Pianta et al., 2008), or through structured observation tools, such as MOT(Management of Time)/CA(Child Activities)/AB(Adult Behaviour), developed within the IEA Pre-Primary Project. Equally, the effects of working conditions on staff-child interactions were examined in eight studies which used as measurement tools either rating scales (CIS) or structured observation protocols recording verbal interactions between staff and children. Quite remarkably, only six out of 15 studies investigated the effects of working conditions on children's cognitive and non-cognitive outcomes. This suggests that evaluation studies on working conditions carried out in European Member States are more likely to report findings on process quality (such as environmental quality and staff-child interactions) rather than on children's outcomes (cognitive and social abilities).

Table 3.9 Outcomes reported (n=15)

Outcomes measured	Tool used for measurements	N	Of which n were mixed method studies
ECEC quality	ECERS	5	2
	CLASS	2	1
	Structured observation tools (MOT/CA/AB)	1	0
Staff-child interaction	CIS	4	1
	Structured observation protocols	2	0
	Not clearly stated	2	0

Outcomes measured	Tool used for measurements	N	Of which n were mixed method studies
Children's outcomes	Cognitive and social abilities standardised assessment	3	1
	Cognitive abilities tests only	3	1
	Social abilities tests only	0	0

Note: Studies could measure more than one outcome

Qualitative studies

The section below describes the characteristics of 41 studies reporting qualitative findings derived from qualitative and mixed-methods research studies. Two linked studies from UK (Blatchford et al., 2001 and Blatchford et al., 2002) as well as two linked studies from Finland (Happo et al., 2012 and Happo et al., 2013) were counted as one study each in mapping as they reported on the same research project. Of the 41 views studies mapped, thirty two studies (78%) were included in the qualitative in-depth synthesis. Nine of 41 studies (22%) reporting qualitative findings in relation to the effects of CPD or WC were excluded from the in-depth synthesis on the basis of study design or methodological rigour criteria (low 'usefulness' and 'reliability' of reported findings).

Country

Table 3.10 shows that the majority of studies evaluating the effects of CPD initiatives and working conditions on practitioners (knowledge, practices, understandings), staff-child interactions or children's learning and socialising experiences were conducted in UK (n=9, 22%). Eight were from Portugal (20%); six from Ireland (15%); five from Sweden (12%); three from Spain (7%); two from Belgium, Finland and Germany (5%) with Croatia, Italy and Slovenia each accounting for nine percent of the studies.

Table 3.10 Country in which studies were conducted (n = 41)

Country	N	Of which n were mixed method studies
United Kingdom	9	2
Portugal	7	2
Ireland	6	2
Sweden	5	0
Spain	3	2
Belgium	2	0
Finland	2	1

Country	N	Of which n were mixed method studies
Germany	2	1
The Netherlands	2	0
Croatia	1	0
Italy	1	0
Slovenia	1	0

Publication date

Table 3.11 shows that there are very few studies relevant to the research questions published before 2001. The majority of studies (34 of 41) were published between 2007 and 2014. The fact that scholarly research published on the effects of CPD and WC developed exponentially in the last seven years may indicate that the topics investigated in this review only recently gained international research attention, probably in conjunction with an increased focus on ECEC quality in international policy debates (EC, 2014; OECD, 2012). In fact, it is worth noting that over half of the views studies mapped (23 out of 41) were published after 2010.

Table 3.11 Studies by publication date (n=41)

Date	N	Of which n were mixed method studies
1991 – 1993	1	0
1994 – 2000	3	0
2001 – 2006	4	3
2007 – 2014	33	7

Methodological characteristics of views studies

The methodological characteristics of the qualitative studies included in mapping varied greatly both in terms of research design and in terms of methods used for data collection and analysis. In the data extraction framework elaborated by the team for the mapping of qualitative studies, four broad categories were identified in order to classify studies in relation to their methodological characteristics:

- studies adopting a participatory approach to the evaluation of CPD initiatives or working conditions investigated; data are usually collected through open-ended questionnaires,

semi-structured or in-depth interviews, focus groups, reflective diaries, participant observations in ECEC settings and audio-video recording of pedagogical practice;

- studies adopting an action-research approach which involves practitioners in the process of data collection and analysis; in this case most frequently reported data sources are consisting of action plans, written accounts of practitioners' and children's experiences in ECEC settings, reporting of group meetings' and audio-video documentation;

- case studies adopting a descriptive approach to the investigation of CPD programmes or working conditions by drawing on data such as narrative accounts of practitioners' experiences (in-depth interviews, focus groups, participant observations in ECEC settings and so on);

- studies adopting an exploratory approach to the topic investigated (either CPD or WC) without making specific reference to any initiative; data are collected through open-ended questionnaires or narrative accounts of practitioners' professional stories.

As showed in Table 3.12 the majority of views studies included adopted either a participatory evaluation design (19 of 41; 46%) or an action-research design (16 of 41; 39%) while descriptive cases and exploratory studies accounted for just 15% of the total (6 of 41 studies).

Interestingly, more than half of views studies adopting an evaluation design were carried out in UK and Ireland (11 out of 19) while action-research designs were more commonly found in studies carried out in Sweden and in Continental Europe.

Table 3.12 Studies by design (n=41)

Study design	**N**	**Of which n were mixed method studies**
Participatory Evaluation (including multi-methods evaluation studies)	19	8
Action-Research (including praxiological and practitioners' oriented research)	16	0
Descriptive Case Study	4	2
Other (exploratory study/ qualitative survey)	2	0

Topics in focus and reported views

Views studies focused overwhelmingly on CPD initiatives. These were investigated in 38 out of 41 studies. Qualitative findings related to practitioners' perspectives on working conditions were reported only in three studies, of which one focused simultaneously on CPD and WC.

Table 3.13 Focus of views studies (n=41)

Intervention	N	Of which n were mixed method studies
Only CPD	38	7
Only WC	2	2
CPD and WC	1	1

The included qualitative studies investigated practitioners' views about the effects of CPD and working conditions on their knowledge, practices and understandings, on their everyday interactions with children and on children's learning and socialising experiences within ECEC settings.

Type of CPD initiatives and reported views of participants

The views studies included in mapping described and evaluated a wide range of CPD initiatives which differ in terms of delivery modes, scope and duration (Table 3.14). 32 of 39 (82%) studies reporting qualitative findings on the effects of CPD, analysed programmes integrated into ECEC practices through a combination of training sessions and follow-up activities in the settings. In particular, 24 out of these 32 studies investigated integrated programmes in which training sessions were accompanied by coaching or supervision activities providing practitioners' with the opportunity of exchanging reflections and receiving feedback on practice, whereas eight studies examined integrated programmes without follow-up activities. Of the remaining five studies, two were exploratory surveys and three did not provided sufficient information for the categorisation of the CPD initiative investigated.

The high number of views studies exploring CPD programmes that included follow up activities such as coaching, supervision and collective reflection is partly due to the fact that in action-research designs revision and transformation of practices are integral parts of the research process, which is carried out as a joint activity involving practitioners and researchers together. In this research design, the boundaries between the processes of CPD implementation and research investigation are less marked than in impact studies.

Similarly to the quantitative studies, most qualitative studies (n=28 of 39) focused broadly on various topics related to ECEC practices (broad scope) rather than on specific subject areas

(narrow scope). Narrow scope CPD initiatives focused on speech/language development (n=2), on early maths and science teaching (n=2) or on creative learning (n=1). In three cases the scope of CPD intervention was not stated or clearly defined within the study.

In more than one third of views studies on CPD (14 of 39; 36%) the effects of long-term professional development initiatives (carried out for over one year) are described or evaluated. The equivalent figure for quantitative studies is 24 percent. Remarkably, nearly one third of views studies reporting the effects of CPD initiatives (n=12 of 39) do not clearly specify the duration of training in terms of length of the programme and/or number of session delivered.

Table 3.14 Type of CPD studied: instructional characteristics (n=39)

CPD			**N**	**Of which n MM**
Delivery	Training integrated into ECEC centres' practices (onsite training or combination of off-site training and follow up activities)	With coaching / supervision (feedback)	24	4
		Without coaching / supervision	8	1
	Training not integrated into ECEC centres' practices		2	1
	Not stated / unclear which type		5	2
Scope	Broad scope	Courses covering various topics	28	4
	Narrow scope	Courses with specific focus	8	2
	Not stated / unclear which type		3	2
Duration	Less than six months		1	1
	Six months to one year		12	1
	More than one year		14	3
	Not clearly specified		12	3

As illustrated in Table 3.15, the majority of views studies investigated the effects of CPD initiatives on practitioners' knowledge, practice and understandings as reported by participants themselves or as observed by the researcher. The changes produced by training activities on the interactions between adults and children was studied in eleven studies (of 39), whereas the effects of training on the observed experiences of children in ECEC setting was investigated in only four studies.

Table 3.15 – Practitioners' views reported in relation to CPD initiatives (n=39)

Reported views		N	Of which n were mixed method studies
Effects on practitioners	Professional knowledge and understanding	29	5
	Professional practices	26	5
Effects on interactions between practitioners and children		11	3
Effects on children's learning and socialising experiences		4	2

Note: Studies could report participants' views on more than one effect

Working conditions studied and reported views of participants

Only three of the 41 view studies mapped explored practitioners' perceptions in relation to staff working conditions. Interestingly, two of three are mixed-methods studies, which might indicate that the issues related to staff working conditions in ECEC settings are under-investigated in qualitative research.

Table 3.16 Working conditions studied (n=3)

Working condition	N	Of which n were mixed method studies
Staff: child ratio	1	1
Group size	2	2
Working environment	1	0
In-service training opportunities	1	1
Facilities and resources	1	1

Note: Studies could simultaneously investigate more than one component.

Similarly to the quantitative counterpart, most studies explored the influence of staff:child ratio, group size and in-service training opportunities on practitioners' professional practices whereas the effects of working conditions on children's learning experiences were reported in only one study.

Table 3.17 – Practitioners' views reported in relation to WC (n=3)

Reported views		N	Of which n were mixed method studies
Effects on practitioners	Professional knowledge and understanding	0	0
	Professional practices	2	2
Effects on interactions between practitioners and children		2	2
Effects on children's learning experiences		1	1

Note: Studies could report participants' views on more than one effect.

Moving from mapping to in-depth review: quality assurance results

For the in-depth review, additional criteria in relation to the methodological rigour of the studies were applied by two reviewers independently.

In order to be included in the quantitative synthesis, impact studies had to be carried out as Controlled Trials or as Before and After evaluations in order to capture impact over time. Additionally, impact studies had to be assessed as 'sound' or 'sound despite discrepancy with quality criteria' at the quality appraisal stage. Only those studies that avoided all three type of bias stated in the QA tool (selection bias, bias due to loss of follow up and selective reporting bias) were assessed as 'sound'. Those studies avoiding at least one bias with two bias partially avoided were judged 'sound despite quality criteria' and therefore still be included in the in-depth review, whereas those studies that did not avoid any of the three bias in full were excluded from quantitative synthesis as they were judged 'not sound' by the reviewers. Of the 35 studies reporting quantitative findings described in the mapping phase, fourteen (40%) were included in the in-depth review. Twenty-one studies were excluded from synthesis on the basis of either research design (n=20, 57%) or 'study soundness' as assessed at the quality appraisal stage (n=1, 3%).

Qualitative studies, in order to be included in in-depth review, had to report: a) practitioners' views in regards to the effects of CPD initiatives they had participated in; or b) practitioners' perceptions in regards to working conditions enacted in the ECEC settings within which they were working. Therefore, exploratory studies and qualitative surveys were excluded at this stage. In addition, views studies were critically appraised against qualitative research criteria and each study was allocated 'a weight of evidence' with two dimensions. First, reliability of findings was rated in relation to the rigour of sampling, data collection, data analysis and reporting procedures. Second, the usefulness of findings were rated with regard to the extent to which richness and complexity of analysis was portrayed and perspectives of participants encouraged and valued. Studies that were rated 'low' on both reliability and usefulness dimension were excluded from qualitative synthesis. Out of the 41 studies reporting qualitative

findings described in mapping, thirty-two studies (78%) were included in in-depth review, while nine were excluded from synthesis either on the basis of study design or on the basis of QA criteria (low usefulness and reliability).

Table 3.18 Studies included in map and in-depth review

Type of study design		**N studies included in mapping**	**Of which n were included in in-depth review**
Quantitative studies	RCT	2	2
	Before and After evaluation	13	12
	Other designs (eg. cross-sectional, comparative)	20	0
Qualitative studies	Participatory Evaluation	19	14
	Action-Research	16	15
	Descriptive Case Study	4	3
	Other (exploratory study/ qualitative survey)	2	0

Note: the numbers reported in the table include quantitative and qualitative parts of mixed-methods studies therefore mixed-methods studies were counted twice.

Results: impact studies

This section describes the findings of our review of the research evidence. First, we provide an overview of the main characteristics of the studies included in the in-depth review. Second, we present the summary of main findings for each of the 14 studies in the in-depth review alongside the weight of evidence accorded each study by the review team and the review team's subsequent conclusions about the soundness of the each study. Finally, we synthesise findings on the impact of CPD and working conditions on ECEC quality, staff-child interaction and children's outcomes.

Characteristics of impact studies selected for the in-depth review

14 studies were selected for in-depth review, using the inclusion criteria presented in Chapter 2. They were published between 1996 and 2014. Four of them were undertaken in Germany (Beller et al. 2007 and 2009; Bushmann and Jooss, 2011; Evanschitzky et al., 2008; Simon and Sächse, 2011), three in Sweden (Palmerus, 1996; Sheridan, 2001; Sundell, 2010), two in Ireland (Hayes et al., 2013; Rhodes and Hennessy, 2001), and one each in the United Kingdom (Blatchford et al., 2001 and 2002), Belgium (Vandenbroeck et al., 2008 and 2013), Denmark (Jensen et al., 2013), the Netherlands (Fukkink and Tavecchio, 2010) and Spain (Franco Justo, 2008).

Nine studies were selected while reviewing the articles written in English (Blatchford et al., 2001 and 2002; Fukkink and Tavecchio, 2010; Hayes et al., 2013; Jensen et al., 2013; Palmerus, 1996; Rhodes and Hennessy, 2001; Sheridan, 2001; Sundell, 2000; Vandenbroeck et al., 2008 and 2013) and the remaining five were selected from the studies in original language (Beller et al. 2007 and 2009; Bushmann and Jooss, 2011; Evanschitzky et al., 2008; Franco Justo, 2008; Simon and Sächse, 2011).

11 of the 14 studies included in the in-depth review focused on the impact of continuing professional development interventions. Among these, only two were carried out as controlled trials and they were both RCT (Hayes et al., 2013; Jensen et al., 2013). Most studies adopted an evaluation design with before and after measurement involving an experimental and a control group in order to assess the effectiveness of CPD interventions (Beller et al. 2007 and 2009; Bushmann and Jooss, 2011; Evanschitzky et al., 2008; Franco Justo, 2008 Fukkink and Tavecchio, 2010; Rhodes and Hennessey, 2001, Sheridan, 2001; Simon and Sächse, 2011) whereas only one used a longitudinal design involving a before and after measure in order to evaluate the impact of an intervention combining training and policy measures (Vandenbroeck et al., 2008 and 2013).The influence of working conditions was analysed in four studies (Blatchford et al., 2001 and 2002; Hayes et al., 2013; Palmerus, 1996; Sundell, 2010) in which the effects of class-size, staff:child ratio and non-contact time were measured in terms of change of ECEC quality, staff-child interaction and children's outcomes over time.

As illustrated in Table 4.1, nine (of 11) studies on continuous professional development investigated the impact of training interventions that were integrated into ECEC practices

through a combination of learning courses and follow-up activities such supervision and coaching. In particular:

- four studies examined the impact of intensive short-term interventions (4 to 20 sessions, over a 6-month period) adopting video-supervision as a tool for enhancing practitioners' reflection on practice in order to improve their interactions with children and children's outcomes (Beller et al., 2007 and 2009; Bushmann and Jooss, 2011; Fukkink and Tavecchio, 2010; Simon and Sächse, 2011);

- five studies investigated the impact of long-term interventions (lasting from one to two years) combining lectures or workshops with ongoing pedagogical guidance supporting practitioners' collective reflection within ECEC settings in order to improve ECEC environmental and process quality and outcomes for children (Evanschitzky et al., 2008; Hayes et al., 2013; Jensen et al., 2013; Sheridan, 2001; Vandenbroeck et al., 2008 and 2013).

In addition, one study reported on the impact of a short-term intensive training intervention integrated into practice (involving children's observation and project work) but without any feed-back component (Rhodes and Hennessy, 2001) and another evaluated a short-term intensive training programme that was not integrated into ECEC practices (Franco Justo, 2008).

In regards to the outcome measured, the majority of CPD studies included in the in-depth review reported findings concerning the impact of interventions on children's outcomes (Beller et al., 2007 and 2009; Bushmann and Jooss, 2011; Evanschitzky et al., 2008; Franco Justo, 2008; Hayes et al., 2013; Jensen et al., 2013; Rhodes and Hennessy, 2001). The impact of CPD on staff-child interactions were reported in five studies (Beller et al., 2007 and 2009; Fukkink and Tavecchio, 2010; Hayes et al., 2013; Rhodes and Hennessy, 2001; Simon and Sächse, 2011), whereas the impact of CPD on ECEC quality was reported in just three studies (Hayes et al., 2013; Sheridan, 2001; Vandenbroeck et al., 2008 and 2013).

Only four studies included in the in-depth review evaluated the impact of working conditions. Such studies measured the effect of staff: child ratio (Palmerus, 1996; Sundell, 2010; Hayes et al., 2013) and class size (Blatchford et al., 2001 and 2002) on the outcomes for children (Blatchford et al., 2001 and 2002; Hayes et al., 2013; Sundell, 2000), staff-child interaction (Palmerus, 1996; Hayes et al., 2013) and ECEC quality (Hayes et al., 2013).

Further details on the impact studies included in the in-depth review are illustrated in Table 4.1 which reports the main characteristics of each of the fourteen studies included in the synthesis.

Table 4.1 Characteristics of studies included in the in-depth review

Author + Year	Country	Aims and objectives of study	What was studied?	How was it studied?
Beller, S. and Beller, K. (2009) Enhancing the quality of language stimulation in ECEC institutions to increase educational outcomes for 4 and 5 year old children from families with low SES and immigrant background. A pedagogical intervention model. Final report. [translation from German] Beller, K., Merkens, H., Preissing, C.; Beller, S. (2007). Final report of a qualification programme of educators for	Germany	- Evaluate whether the intervention enhances the educational outcomes for children from low SES and immigrant families (Beller et al. 2009) -Aim of the study was to assess the impact of the training intervention for teachers on children's language and cognitive development (Beller et al. 2007).	**Sample characteristics:** Beller et al. (2009): - Children: 4 and 5 years old; 55% male; 45% female - Teachers: characteristics not stated Beller et al. (2007): -Children: 1-3 years old; 49% male, 51% female - Teachers: characteristics not stated **Settings:** Beller et al. (2009): 26 different groups in ECEC Centres in Berlin. Beller et al. (2007): ECEC Centres in Berlin. **Objectives of programme:** - Enhance the quality of language stimulation in ECEC institutions. - Help teachers to develop a democratic and affirmative educational approach which is considered to have a positive impact on the development of children's' language and cognitive skills.	**Design:** Pre-test and post-test design. **Comparison group and sample size:** Beller et al. (2009): - 151 children 4 and 5 years old from 26 different groups in ECEC centres (n=73 for the intervention group, n=78 for the control group) - --38 ECEC teachers (n=18 for the intervention group, n= 20 for the control group). Beller et al. (2007): -155 children 1-3 years old (n=88 for the intervention group, n=67 for the control group) - 31 ECEC teacher (n=18 for the intervention group, n=13 for the control group) **Data collection methods:** Beller et al. (2009): -Teachers:The quality of verbal stimulation and educational behaviour were rated according to rating scales developed by Beller et al. (1996, 2006) in a pre-post-design on the basis of video clips. - Children: Heidelberger Sprachentwicklungstest, Coloured Progressive Matrices, Mann-Zeichen-Test,

enhancing the language stimulation in ECEC institutions – an intervention study. Final report. [translation from German] LINKED STUDY			**Programme description and content:** Training integrated into practices with feedback provided through video-supervision <u>Theoretical model underpinning the programme:</u> the language stimulation is embedded in everyday pedagogical practice in ECEC services and addresses all children. It is in line with the constructivist German "*Situationsansatz*". <u>Delivery</u>: Training sessions takes place with a weekly rhythm when trainers visit the ECEC group: in a weekly turn trainer and ECEC teacher alternately plan and engage in "typical" situations with children, (e.g. teacher-initiated activities, free play, meals). The other person is in the role of observer and produces a video clip of the observed situation. During the 1:1 feedback session video clips are analysed and rated together with regard to language stimulation and educational behaviour. The video feedback allows the teachers (and trainers) to watch and reflect on their own practice and identify opportunities for language stimulation. At the same time the trainer can serve as an inspiring role model for the teacher. <u>Duration:</u> 6 months	Persön̈lichkeits-Motivations-Rating. Beller et al. (2007): -Teachers: The quality of verbal stimulation and educational behaviour were rated according to rating scales developed by Beller et al. (1996, 2006) in a pre-post-design on the basis of videoclips. -Children: Cognitive and language development were assessed by ECEC teachers based on a development index ("Entwicklungstabelle", Beller and Beller 2000). Additionally, childrens' language skills were tested with SETK-2 (Grimm 2000). **Outcomes measured:** - Child: Language development, cognitive skills - Teacher: verbal stimulations, educational practice.

Blatchford, P., Goldstein, H., Martin, C. and Browne, W. (2002). Relationships Between Class Size and Teaching: A Multimethod Analysis of English Infant Schools. Institute of Education: University of London. LINKED STUDY	United Kingdom	- Assess the effects of class size differences on pupils' academic progress (literacy and mathematics) during the reception year	**Sample characteristics:** - 9330 children **Settings:** - 220 schools with 368 classes **Hypothesised impact:** Relationship between class size and achievement for children [p. 1] **Description of working conditions:** - Class size.	**Design:** Large scale longitudinal study (two cohorts of children over the first three years of school) [p. 7] **Comparison group and sample size:** - N=9330 children [p. 7] - no control group **Data collection methods:** Standardised/validated measurement tools: - Avon Reception Entry Assessment [p. 7] - Literacy Baseline component of the Reading Progress Test [p. 8] Other: - Teacher-administered test (in case of mathematics) - Termly questionnaire on class sizes and classroom activities [p. 8]. **Outcomes measured:** - Child: cognitive (literacy and mathematics)
Buschmann, A. and Jooss, B. (2011). Language promotion in day care facilities for children: Effectivity of a speech-based interaction training for educational	Germany	- Evaluate the effectiveness of a speech based interaction training in comparison to a conventional skill enhancement (one day knowledge transfer).	**Sample characteristics:** - Language delayed children at 21 months of age. **Settings:** 14 ECEC centers in Heidelberg and Stuttgart. **Objectives of programme:** - Child: increase vocabulary - Child: improved language production at	**Design:** Pre-test and post-test design. **Comparison group and sample size:** - 30 ECEC teachers (n=17 for the intervention group, n=13 for the control group) - 28 language delayed children at 21 months of age (n=15 for the intervention group, n=13 for the control group). **Data collection methods:** - Assessment of children's language skills: SETK-2 (Grimm

professionals [translation from German].			the age of 30 months - Teachers are trained to respond sensitively to children's language skills, adopt a stimulating attitude, apply language modeling techniques, and identify opportunities for language learning in everyday interactions. **Programme description and content:** Training integrated into practices with feedback provided through video-supervision Theoretical model underpinning the programme: Language based interaction training named „*Heidelberger Trainingsprogramm zur fruẖen Sprachfoẗrderung in Kitas*" Delivery: Group sessions with intensive use of role play, supported by the videosupervision of a picture book situation in the ECEC setting (5 sessions) Duration: not specified	2000), ELAN-questionnaire for parents to assess the active vocabulary of children (Bockmann and Kiese-Himmel 2006). **Outcomes measured:** - Child: vocabulary; language skills including understanding and production of words and sentences.
Evanschitzky, P., Lohr, C. and Hille, K. (2008). Mathematics, science and technology in kindergarten. Study of the impact of an	Germany	- Assess the effectiveness of a training program (MINT) for kindergarten teachers in the field of mathematics, science and technology - Investigate the effects of the programme on children's	**Sample characteristics:** - 35 teachers, - 217 children. **Settings:** 12 ECEC Centres. **Objectives of programme:** - Aim of the training is to change ECEC teachers' attitudes towards topics such as Mathematics, Science and Technology and	**Design:** Pre-test and post-test design. **Comparison group and sample size:** 35 teachers (n=23 for the intervention group, n=12 for the control group), - 217 children (n=176 for the intervention group, n=41 for the control group). **Data collection methods:**

in-service training for kindergarten teachers [translation from German].		development of mathematical concepts and interest in science.	thereby also encourage children's competences and interest in this field (by emphasizes the process of explorative learning) - Child: development of mathematical concepts, curiosity and an explorative attitude in children. **Programme description and content:** Training integrated into practices with feedback in reflection groups <u>Theoretical model underpinning the programme:</u> Not stated <u>Delivery</u>: Group sessions focused on observation, critical reflection, and experimentation. The educators are following themselves in the course a learning path of practical scientific research, so that they are able to develop those competence by the children they are caring for (90 sessions, lasting 4/5 hours each) <u>Duration</u>:2 years	- Teachers and parents were asked to fill in a questionnaire before and after one year of teachers' training - Children: Osnabrücker Test zur Zahlbegriffsentwicklung to assess the development of pre-mathematical skills. **Outcomes measured:** - Child: mathematical concepts - Child: development of mathematical skills - Child: curiosity, explorative attitude
Franco Justo, C. (2008). Programme of relaxation and self-esteem improvement in kindergarten	Spain	- Analyse the effects of the programme (relaxation and improvement of self-esteem), on the levels of anxiety, self-esteem and creativity graphics	**Sample characteristics:** 24 female pre-school teachers from the Andalusian Autonomous Community; 285 children aged between 4 years, 9 months and 5 years, 9 months. **Settings:** Public centres of Education	**Design:** - Pre-test and post-test design. **Comparison group and sample size:** - 24 teachers (n=12 for the intervention group, n=12 for the control group) - 285 children (n=136 of which 48% boys

teachers and their relationship with the creativity of their students [translation from Spanish].			(Educación Infantil in Almería). **Objectives of programme:** improve self-esteem of practitioners and children's graphical creativity (fluidity, flexibility and originality) **Programme description and content:** Training not integrated into practices (offsite training without follow up activities in ECEC settings) Theoretical model underpinning the programme: not specified Delivery: 40 group based sessions on relaxation, assertivity and self esteem (practical techniques) Duration: 20 weeks	and 52% girls for the intervention group; n=149 of which 46% boys and 54% girls for the control group) **Data collection methods:** Standardised measurement tools: - Beck Anxiety Questionnaire for the assessment of the level of anxiety - Rosenberg Self Esteem Scale for the assessment of the level of self esteem - Figure Battery Test of Creative Thinking Torrance for the level graphic creativity. **Outcomes measured:** - Child outcomes: Graphical fluidity, flexibility and originality - Teacher: level of anxiety and self-esteem
Fukkink, R. and Tavecchio, L. (2010). Effects of Video Interaction Guidance on early childhood teachers.	The Netherlands	- Evaluate the effectiveness of the Video Interaction Guidance (VIG) Training for trainers in ECEC. - Investigate the effect of the training on the sensitivity and stimulating skills of ECEC teachers - Investigate whether the training generates increases in the concrete behaviors that are distinguished by the VIG method	**Sample characteristics:** 52 teachers in ECEC Settings. **Settings:** ECEC Settings - Assignment to the experimental and the control condition was randomized at the level of the childcare centre: particular day-care centres were assigned to the experimental training group, whereas other centres were assigned to the control group. **Objectives of programme:** - Providing childcare staff with this opportunity helps	**Design:** Pre- and Post-test design **Comparison group and sample size:** 95 teachers were involved in the study: - 52 for the experimental group - 43 for the control group - The third filming session (which was only for the VIG group) took place three months after the training. n = 52 for the treatment group) **Data collection methods:** - "Job Resources" scale

			them to gain a realistic perception of their job performance, while reflecting on their interactional behaviour promotes teachers' critical thinking about their interactional behaviours. - Video feedback functions as a catalyst for critical reflection and provides teachers and their trainers with a tool to engage in a dialogue. **Programme description and content:** Training integrated into practices with feedback provided through video-supervision <u>Theoretical model underpinning the programme:</u> Video Interaction Guidance Training. A central component of the VIG training that was implemented is the analysis of video clips of interactions with children in the actual work setting, followed by a discussion with a trainer: its unique feature is that trainees watch themselves from a distance and have time for self-reflection. <u>Delivery:</u> teachers were videotaped while working with their groups. The trainer watched the video subsequently and selected a number of video fragments for review. In a next session, the trainer and the teacher engaged in a detailed discussion	- scale for sensitive responsivity - Verbal Stimulation scale - Caregiver interaction scale - The caregivers were filmed for about 10-15 min for each measurement; After each filming session, the filmer and the caregiver each completed a separate short questionnaire. **Outcomes measured:** - Staff-child interactions - Sensitivity and stimulating skills of early childhood teachers.

			of these video clips - Group based - 4 sessions. Duration: not stated	
Hayes, N., Siraj-Blatchford, I., Keegan, S. and Goulding, E. (2013) Evaluation of the Early Years Programme of the Childhood Development Initiative. Dublin: Childhood Development Initiative (CDI).	Ireland	- Evaluate the effectiveness of the Early Childhood Care and Education Programme of the Childhood Development Initiative, a 2-year programme including an on-site training component as well as staff no-contact hours and more favourable child:staff ratio of 1:5 than the national comparison of 1:6	**Sample characteristics:** **-** children aged 2 years 6 months to 4 years (n=311 at baseline, n=331 at mid-phase, n=294 at end-phase) -early years practitioners: characteristic not specified **Settings:** ECEC settings in Tallaght West. The research was designed as a cluster randomised trial, an experimental method by which social units or clusters (Early Years services) were randomly allocated to intervention or control groups **Objectives of programme**: the CDI *Early Years* Programme was designed to support and target all families in Tallaght West, including those whose children may face barriers to educational achievement and well-being. **Programme description and content:** Training integrated into practices combined with the provision of no-contact hours and favourable staff-child ratio. Theoretical model underpinning the	**Design:** randomized controlled trial. **Comparison group and sample size:** Two cohorts of children: - first cohort intervention group (n=77, 78, 70), control group (n=75, 52, 54) - second cohort control group (children n=76, 69, 58) Two cohorts of practitioners working in intervention and control group settings (no further specified) **Data collection methods:** Child assessment: - British Ability Scales - Rhyme and Alliteration - Lower letter recognition - Adaptive Social Behaviour Inventory - Strengths and Difficulties Questionnaire Assessment of ECEC services' quality: - ECERS-R - ECERS-E -The Arnett Caregiver Interaction Scale (CIS)

			programme: not stated Delivery: all intervention Early Years practitioners were trained in the delivery of the HighScope curriculum and the Síolta framework, an extra Early Years practitioner was introduced to allow a ratio of 1:5. Furthermore practitioners operated a key worker system and worked a 37-hour week, which, being longer than typical childcare working weeks, allowed for curriculum and daily planning and individualised record-keeping. Duration: 2 years	**Outcomes measured:** -Chidren's cognitive and non-cognitive outcomes -Staff-child interactions (CIS) -ECEC environmental quality
Jensen, B., Holm, A. and Bremberg, S. (2013). Effectiveness of a Danish early year preschool programme: A randomized trial.	Denmark	- Establish effects of a new method for enhancing preschool quality, "Action Competences in Social Pedagogical Work with Socially Endangered Children and Youth" on child competences, both in children in general and in children from disadvantaged families.	**Sample characteristics:** The participating 58 preschools were first stratified into three groups on the basis of the parents' level of education, social welfare dependency and unemployment status; then randomly selected to either the intervention group (n=29) or the reference group (n=29) [p. 118]. **Settings:** a randomized controlled trial was carried out in two Danish municipalities. It included a total of 37 and 200 preschools, respectively. In a first step all preschools with at least 39 children were selected, i.e. 19 preschools of the 37 participating preschools in the first municipality, and 39 preschools of 200 participating preschools	**Design:** randomized controlled trial. **Comparison group and sample size:** - Reported total sample: 2314 3-6-year-old children in 58 preschools; - 1141 children in 29 treatment day care centres; - 1173 children in 29 control day care centres. **Data collection methods:** standardised tool - Strengths and Difficulties Questionnaire (SDQ) to assess the psycho-social adjustment of the children (Goodman, 1997). Data were collected immediately prior to, during (eight months into the intervention) and at the end of the

			in the second municipality [p. 118]. **Objectives of programme:** In the programme "Action Competences in Social Pedagogical Work with Socially Endangered Children and Youth" preschool staff members were supported in their efforts to critically reflect on current practices and to change these. **Programme description and content:** Training integrated into practices with coaching activities in ECEC settings <u>Theoretical model underpinning the programme</u>: "Action Competences in Social Pedagogical Work with Socially Endangered Children and Youth" building on the principle of systematic quality improvement of early year preschool <u>Delivery:</u> - two 6-hours workshops in large groups (100 people) held once a year - education and training in reflection groups within ECEC settings with coaching of university consultants (approx..17 hrs, 3 hrs each session) - conferences with pedagogical consultants at municipal level (3 in total) <u>Duration</u>: 2 years	intervention (after 20 months) [p. 119]. Two different statistical approaches were used: non-parametric growth-curve model (Goldstein, 2010); difference-in-difference approach, explained in more detail below (Bertrand, Duflo, and Mullainathan, 2004) [p. 120]. **Outcomes measured:** child competences, both in children in general and in children from disadvantaged families [p.118].

Palmerus, K. (1996). Child-Caregiver Ratios in Day Care Centre Groups: Impact on Verbal Interactions.	Sweden	- Elucidate the effect of adult/child ratio on communication patterns in a day care setting. In this study the ratio is calculated on the number of children actually present in the setting and not, as is mostly done, on the number of children enrolled. By comparing periods with a relatively low ratio of present children/caregiver with periods with a high ratio, we examined the impact of this ratio on verbal interaction between caregivers and children [45].	**Sample characteristics:** Two caregivers were each observed. In both observation-periods 17 children were enrolled [p. 48]. **Settings:** In a large study of the impact of adult: child ratio on quality factors in day care centres on activity patterns, social interactions, and language activities, the staff of 6 centres were observed for 12 hours each (Palmerus and Hagglund, 1991) [p. 47]. The [previous] study included six day care centre groups and the staff members in the groups, a total of 20 employees. The current study included two of the original caregivers. **Hypothesised impact:** by comparing situations with a high ratio to situations with a low ratio, several hypotheses were tested. In situations with a high ratio, compared to a low ratio, we predicted that: 1. Fewer words are uttered and shorter sentences are used. 2. The adult addresses him/herself more often to groups of children and less often to individual children. 3. The frequency of monologues increases and the frequency of dialogues decreases. 4. Verbal interactions of caregivers with other adults are less frequent. 5. Staff verbal alterations are more often related to demands of the work situation and less often related to personal	**Design:** Data for this report are drawn partly from the earlier study (Palmerus and Hagglund, 1991) and partly from additional data collections. The current study included two of the original caregivers, which were each observed for an additional 12 hours, creating samples of their interactions with children under low and high ratio conditions [p. 47]. **Comparison group and sample size:** 2 teachers and 17 children, no comparison group. **Data collection methods:** A year after the main observation period, the adult/child ratio adults and children actually present changed dramatically in one of the centres. Two of the original caregivers were each observed for an additional 12 hours, creating samples of their interactions with children under low and high ratio conditions. In this study the verbal interactions of these 2 caregivers have been analysed [p. 47]. **Outcomes measured:** - Staff child interaction.

			concerns [47-48]. **Description of working conditions:** caregiver-child ratio.	
Rhodes, S. and Hennessy, E. (2001). The effects of specialized training on caregivers and children in early-years settings: An evaluation of the foundation course in playgroup practice.	Ireland	- Examine the effects of a 120-hour preschool training course on caregivers' behaviour and children's development in early years settings.	**Sample characteristics:** - Pre-test: 33 caregivers - Pre-test: 66 children - Post-test: 29 caregivers - Post-test: 50 children - Trainees are required to work with children during the course and to have previously completed a 20-hour introductory course. **Settings:** 33 childcare centres. **Objectives of programme:** - Improvement of practitioners' sensitivity - Improvement in children's complex social and cognitive play. **Programme description and content:** Training integrated into practices without supervision or coaching (no feedback) Theoretical model underpinning the programme: not specified Delivery: Foundation Course in Playgroup Practice involving 120 hours of training: - 90-hours tuition - 30 hours comprehensive of child observation and project work in ECEC	**Design:** - Pre- post-training design with observational measures of caregiver behaviour and child development - Without random assignment ('non-equivalent control group design'). **Comparison group and sample size:** - Caregivers: intervention group n=16 (participants who successfully completed the training course) and control group n= 17. -children: 66 children participated in the study at pre-test (two children from each centre where training and comparison participants were employed) and 50 (76%) children remained at post-test. There was a similar dropout rate for the children in the training and comparison groups from pre- to post-test (25% and 24%, respectively). **Data collection methods:** - Caregiver Interaction Scale (CIS) - Child Development Social competence was rated on the 5-point Peer Play Scale (PPS) - Cognitive competence was rated on the 5-point Play with Objects Scale (POS).

			settings within which practitioners are working Duration: Trainees attended classes two evenings per week over 24 weeks, and each class was of 2-hour duration.	**Outcomes measured:** - Caregiver sensitivity - Social and cognitive development of the children.
Sheridan, S. (2001). Quality evaluation and quality enhancement in preschool: A model of competence development.	Sweden	- Investigate whether quality in preschool can be enhanced through a 'Model of Competence Development' which adopts ECERS as a tool for stimulating pedagogues' reflection and sustained improvement of practices.	**Sample characteristics:** 31 pedagogues in the intervention group**.** **Settings:** 20 pre-school units. **Objectives of programme:** The Model of Competence Development is expected to lead to increased competence in pedagogical practice. **Programme description and content:** Training integrated into practices accompanied by pedagogical guidance in ECEC settings Theoretical model underpinning the programme: the Model of Competence Development is built on the assumption that reflection leads to greater pedagogical awareness of what goes on in various pedagogical processes in preschool which in turn improves practices. Delivery: the programme is delivered through a combination of: -lectures and literature studies (8 lectures held once a month) -reflection in groups (sharing knowledge	**Design:** pre- post- evaluation with comparison group **Comparison group and sample size:** - Total sample: 20 preschool units - Intervention group: 31 practitioners working in 9 pre-school units - Control group: 11 preschool units. **Data collection methods:** - ECERS (used both as an instrument to evaluate the quality and as a "tool" for reflection). **Outcomes measured:** - Environmental quality

			and experiences among pedagogues) - guidance (self-evaluation using ECERS, reflective diaries and analysis of video-documentation) Duration: 1 year	
Simon, S. and Sachse, S. (2011). Promoting language skills in day care. Can interaction training improve childhood educators' language-promoting behaviour? [translation from German].	Germany	- Evaluated the effectiveness of the "Heidelberger Trainingsprogramm" on the language-promoting behaviour of early childhood teachers.	**Sample characteristics:** - 499 three and four years old children that were weak in language acquisition (79% of the parents agreed to participate); - ECEC teachers: qualified at upper secondary level 95% in the intervention group, 81.8% in the control group **Settings:** 27groups of ECEC centres where the educators followed the "Heidelberger traningprogramm" were selected. The control group consisted of 25 groups of ECEC. The number of bilingual children was comparable in experimental training group and in control group. **Objectives of programme:** improve the language production of language-delayed children; improve teachers' language-promoting behaviour vis-a-vis language delayed children. **Programme description and content:** Training integrated into practices with feedback provided through video-supervision	**Design:** a pre-test and post-test design **Comparison group and sample size:** -146 children 3-5 years (n= 77 for the intervention group, n=69 for the control group), -49 ECEC teachers (n=27 for the intervention group, n=22 for the control group) [p. 467]. **Data collection methods:** Validated instruments: Aktiver Wortschatztest for children 3-5 years (AWST-R, Kiese-Himmel 2005), Grammatiktest (TROG-D, Fx 2007),SET-K for children 3-5 years (Grimm 2000), Heidelberger Sprachentwicklungstest (HSET, Grimm and Schöler 1991) Additional video-analyses assessed children's' verbal expression and the percentage of time they held in the total communication. The educators were filmed and a coding system was developed according to pre-defined categories (Bortz and Döring, 2006).

			Theoretical model underpinning the programme: Language based interaction training named *„Heidelberger Trainingsprogramm zur frühen Sprachförderung in Kitas“* Delivery: 5 group sessions (4 sessions every 3-4 weeks followed by a 5th session 3 months later) with intensive use of role play and practical sequences between the sessions. The training is supported by the video-supervision of a picture book situation in the ECEC setting Duration: 6 months.	**Outcomes measured:** - Child: linguistic skills (active vocabulary assessed through AWST-R; grammatical understanding assessed through TROG-D, semantics, morphology and phonological memory assessed through HSET, production of sentences assessed through SETK-3) - Teachers: language promoting behaviour
Sundell, K. (2000). Examining Swedish profit and non-profit child care: The relationships between adult-to-child ratio, age composition in child care classes, teaching and children's social and cognitive achievements.	Sweden	- Examine the potential effects of adult: child ratio and profit child care on teaching and children's social and cognitive achievements [p. 92]. Because of severe economic cuts in the child care budget in Sweden from 1990 to 1993, a sharp increase in the number of children in child care classes has been observed (Lidholt and Norrman, 1994) [p. 91].	**Sample characteristics:** 394 children (3 to 5 year-old): - 106 in public; - 79 in private nonprofit; - 209 in private profit child care centers [p. 94]. **Settings:** 32 child centers (16 profit and 16 non-profit) located in Stockholm [p. 95]. **Hypothesised impact:** Effects of programme auspice (nonprofit vs. profit child care), adult-to-child ratios (1:4.6 – 1:8.7), and age span of the child care class on teaching and children's social and cognitive achievement [p. 91].	**Design:** **-** Simple random sample **Comparison group and sample size:** - No control group - Final study group was composed of 394 (90%) of the original sample of children **Data collection methods:** Standardised/ validated measurement tools: - Cognitive Achievement. Coloured progressive matrices; - vocabulary test (Ljungblad, 1989), similar to the Peabody Picture Vocabulary Test; - test to measure children's capacity to

			Description of working conditions: - Staff: child ratio.	report a story to a doll; Other: - peer nominations; - behavioural ratings; - behavioural observations. **Outcomes measured:** Child outcomes: - Cognitive and social competences (verbal abilities; intelligence; social competence).
Vandenbroeck, M., Geens, N. and Berten, H. (2008/2013). The impact of policy measures and coaching on the availability and accessibility of early child care: A longitudinal study. LINKED STUDY	Belgium	- Evaluate the impact of policy measures and the intervention programme on the centre director's access policies and on enrolment rates.	**Sample characteristics:** The data analysis on accessibility and enrolment is based on 88 of the 89 centres [p. 4]. However, data on family income were obtained from only 49 centres, as many centre directors did not report income due to the administrative work it takes to generate these data [p. 4]. **Settings:** all 89 Flemish-funded centres were initially invited, 31 of which are organised by state schools, 16 by municipalities and 42 by private Christian organisations. **Objectives of programme:** comprehensive support programme for centre directors regarding accessibility issues. **Programme description and content:** Training integrated into practices through coaching activities in ECEC settings	**Design:** to test whether changes in priorities or in enrolment were related to participation in the programme, the centres were divided into four groups: non-participants (n=19); early participants (since 2007; n=29); middle participants (since 2008; n=23); and late participants (since 2010; n=18) [p. 4]. **Comparison group and sample size:** - Reported total sample at the baseline: 29 - Reported total sample when intervention/study finishes: 70. **Data collection methods:** self-reported measures – postal questionnaire asking centre directors to asses 12 priorities for access on 5-poiny Likert scale [p. 4]. **Outcomes measured:** - Quality: availability and accessibility of

			Theoretical model underpinning the programme: not specified Delivery: directors met with the trainer on a monthly basis to discuss their plans for accessibility, exchange good practices and meet with social workers who work with diverse populations in their area, such as employment agencies, language courses for immigrants, welfare workers and so forth. They were also offered the opportunity to let their staff participate in a 2-day training course on accessibility and social inclusion. Duration: 2 years	childcare.

Summary of evidence from impact studies

Table 4.2 (below) presents the main findings for each of the fourteen studies included in the in-depth review alongside the weight of evidence accorded to each study by the review team and the review team's subsequent conclusions about the soundness of the each study. Fuller descriptions of these studies are provided below in alphabetical order.

Beller et al. (2007 and 2009) linked studies evaluated a training intervention aimed at enhancing the quality of language stimulation in ECEC institutions as well to support teachers in developing a democratic and affirmative educational approach considered to have a positive impact on the development of children's language and cognitive skills. A pre-test and post-test design involving an experimental group and a control group was used to assess the impact of the intervention on teacher performance and children's outcomes. The first study (Beller et al., 2009) involved 151 children 4 and 5 years old from 26 different groups in ECEC centres (n=73 for the intervention group, n=78 for the control group) and 38 ECEC teachers (n=18 for the intervention group, n= 20 for the control group). The second study (Beller et al., 2007) involved 31 ECEC teachers (n=18 for the intervention group, n=13 for the control group) and 155 children 1-3 years old (n=88 for the intervention group, n=67 for the control group). The main findings of both studies revealed that, as a result of the training, teachers scored higher in various areas which are associated with language stimulation (such as listening to children, responding to their verbal expressions, relating to children's experiences, asking for their opinion, engaging in dialogue with children, supporting and extending children's verbal expression and so on). In addition, Beller et al. (2007) found that the intervention had a positive impact on the language and cognitive development of the children irrespective of their ethnic background or family language. The positive effect was found for all age groups involved. Beller et al. (2009) found that the intervention had a positive impact on the language development of four year old children irrespective of their family language. With regard to five year old children, however, language skills did not develop significantly better than in the control group. In this case, no significant impact was found on the cognitive skills of children.

Blatchford et al. (2001 and 2002) focused on the relationship between class size and achievement for children in their first years of schooling. Relying on a large-scale longitudinal study within English local education authorities, the study presented results for achievement of progress in literacy and mathematics during the reception year when children are aged four. The study involved 220 schools, with 368 classes and 9330 children in eight local education authorities in Cohort 1, and Cohort 2 involved a further five local education authorities (Blatchford et al., 2002, p. 7). Using a series of multilevel models, the researchers demonstrated a strong and significant effect of class size on children's academic attainment over the reception year, both before and after adjusting for possible confounding factor. In regards to literacy outcomes, a reduction in class size from 30 to 20 pupils resulted in an increase in attainment of approximately 0.35 standard deviations for the low attainers, 0.2 standard deviations for the middle attainers, and 0.15 standard deviations for the high attainers. The relationship between class size and children's mathematics progress was also found to be highly statistically significant

(p<0.001). A reduction in class size from 30 to 20 pupils resulted in an increase in attainment of approximately 0.25 standard deviations. In general, the results support the use of small classes during the reception year. In particular, the study found evidence that small classes appear to work best in literacy for those children with the lower school entry scores. This suggests that the children who benefit the most from small classes are those who are most in need academically and who have the most ground to make up (Blatchford et al., 2002, p. 14).

Buschmann and Jooss (2011) reported on the effects of a speech-based interaction training ('Heidelberger Trainingsprogramm zur früẖen Sprachförderung in Kitas') for educational professionals. The study involved 30 ECEC teachers (n=17 for the intervention group, n=13 for the control group) and 28 language delayed children at 21 months of age (n=15 for the intervention group, n=13 for the control group). Research findings report that children whose teachers had participated in the interaction training showed a significantly increased vocabulary and significantly better results in the standardised language developmental test at the age of 30 months. With regard to vocabulary, children in the intervention group scored 197 words (SD 43.7) compared to 138 words (SD 76.8) in the comparison group (T-Test = 2.42, p = 0.03). In the standardised language developmental test intervention group children had significantly better results with regard to the production of words and sentences, whereas no differences were found in the understanding of words/sentences. Over half (53.4%) of children in the intervention group had caught up in language skills with their peers and scored in the normal range, whereas in the comparison group this was only true for approaching a quarter (23.1%) (Buschmann and Jooss, 2011, p. 308).

Evanschitzky et al. (2008) used a pre-test and post-test design involving an experimental group and a control group (35 teachers and 217 children in total) in order to assess the effectiveness of a two year training programme for kindergarten teachers in the field of mathematics, science and technology. Research findings reported that children in the intervention kindergartens showed faster and more advanced development of mathematical concepts than children in the control kindergartens. Children of the intervention group scored significantly higher in pre-mathematical skills test after their teachers had participated in one year of training. In the intervention group, the percentage of children in the highest competence level rose from 38% to 82%, whereas in the control group the rise was from 35% to 58% (Evanschitzky et al., 2008, p. 475). Furthermore, parents and kindergarten teachers reported in questionnaires that children in the intervention group showed an increased interest in numbers and other mathematical concepts, whereas these changes were not found in the control group.

Franco Justo (2008) assessed the effect of training in relaxation and improvement of self-esteem on pre-school teachers and on children in their class (in relation to graphical creativity). It involved an experimental group of female teachers (N=12) who had undergone 40 training sessions during 20 weeks (1.5 hour each) and a control group of 12 teachers who did not attend the training, as well as their pupils (N=136 for the intervention group, 146 for control group). The findings of the evaluation study showed that the implementation of the programme had a significant impact on the levels of *anxiety and self-esteem* in participant teachers, but a limited

impact on children's outcomes in relation to graphical creativity (Franco Justo, 2008, p. 8). In fact, the results of co-variance analysis on pre- and post-test scores showed that significant differences between control and experimental group were found both in relation to teachers' anxiety ($t=4.93$; $p<0.01$) and self-esteem ($t=4.25$; $p<0.01$). Concerning children's outcomes, the results of co-variance analysis on pre- and post-test scores showed that significant differences between control and experimental group were found only in relation to graphical flexibility ($t=3.27$; $p<0.01$), and no significant differences could be found between control and experimental group in regard graphical fluidity ($t=2.48$; $p>0.05$) and originality ($t=1.16$; $p>0.05$).

Fukkink and Tavecchio (2010) assessed the effect of the Video Interaction Guidance (VIG) intervention on the sensitivity as well as on stimulating skills of early childhood teachers. The study involved an experimental group of 53 teachers who participated in four VIG training sessions and a control group of 43 teachers who did not attend the training. A multivariate analysis showed an overall statistically significant difference between the VIG group and the control group. In particular, study findings showed that teachers who had received the training after the intervention were more stimulating than the teachers in the control group and the statistically significant effect for stimulating caregiving was still apparent on the treated group three months after the training. The training also had a positive effect on the quality of verbal stimulation of the trained teachers who made significantly more frequent eye contact with the children, verbally received the initiatives of children more often, and allowed the children to take turns more frequently. The statistically significant experimental gains reported in study findings, range from a medium (stimulating caregiving, ES = 0.61) to a large effect size (verbal stimulation, ES = 0.79 and sensitive responsivity, ES = 1.09), were found to be relatively large if compared to the aggregated effect size of 0.40 for the skills domain, reported in previous meta-analysis (Fukkink and Lont, 2007).

A randomized controlled trial study (**Hayes et al. 2013**) was carried out in order to evaluate the effectiveness of the Early Childhood Care and Education Programme of the Childhood Development Initiative that included both CPD (High-Scope and Siolta training) and a WC component (staff-child ratio and non-contact time). The key-findings from the study show that there was a programme effect on the quality of activities being planned and implemented in intervention services, as well as on the overall curricular and planning quality over time (this had a medium effect size in favour of the intervention group). Early Years practitioners in intervention services created a significantly better literacy environment by the end of the programme, whereas, in the control group, there was no change in the literacy environment. In the control group, there was a significant reduction in caregiver sensitivity scores from baseline to end phase, while in the intervention group there was no significant change in scores across the same time period. There were no statistically significant positive or negative programme effects on child cognitive and language end phase outcome scores. However, at end phase, more intervention group children were classified positively for their conduct, peer relationships, pro-social behaviour and hyperactivity and fewer intervention children than control children were classified as having borderline or abnormal hyperactivity levels.

In a randomized controlled trial, **Jensen et al. (2013)** demonstrated that ongoing support provided to the staff in their efforts to critically reflect on their practices and change them can bring positive effects in the ECEC settings. The CPD intervention studied included three activities: workshops in large groups, education and training in reflection groups and conferences with pedagogical consultants. Children (n=2323) in 59 preschools in two municipalities were assessed using the Strength and Difficulties Questionnaire at the start of the intervention, at mid term, and by the end. The results indicated that in the intervention group, children developed fewer emotional symptoms, conduct problems, became less hyperactive and were more attentive. Therefore, the intervention had a positive effect on emotional symptoms, conduct problems, hyperactivity and inattention, but not on peer relationships and pro-social behaviour. The effect size was only 0.15–0.2 and effect sizes were larger in children of well-educated mothers when compared with low-educated mothers.

Increased demand for high quality public day care places in Sweden allowed **Palmerus (1996)** to carry out a study of the impact of caregiver-child ratio on the quality of the ECEC services. The same caregivers and the same children were observed during two different time periods and detailed records of verbal interactions were studied. The analysis of the audio-recorded verbal communication in one of the groups where the number of children/caregiver was considerably changed, and comparison between the period with a high ratio (>4 present children/caregiver) and a low ratio (<2 present children/caregiver) showed that, with a high ratio, the proportion of child-initiated verbal activities to the caregivers decreased while the proportion of adult-initiated verbal activities increased. In particular, with higher ratios, caregivers initiated 80% of the communication: adults' monologues increased from 61% to 69% while dialogues decreased from 39% to 32%. The findings indicate that with a high ratio caregivers use verbal communication as a tool for control in the group and the author reports that in such conditions childcare becomes more similar to a school-like situation with a more authoritarian atmosphere.

Rhodes and Hennessy (2001) measured the effect of a continuing professional development course called 'Foundation Course in Playgroup Practice' on Irish ECEC practitioners' sensitivity and on the social and cognitive competence of enrolled children (two children per centre). The study found that ECEC practitioners who attended the training course (n=16) made significant gains in positive relationships from pre- to post-training $F(1,20) = 38.56$, $p < .05$, and scored significantly higher overall on positive relationship than the comparison participants at post-training only $F(1,20) = 7.54$, $p<.05$. Training participants also showed a significant reduction in levels of detachment from pre- to post-training $F(1,20) = 15.07$, $p< .05$. The comparison group (N=17) showed no change in ratings of sensitivity from pre- to post-training times. No significant impact was found on permissiveness and punitiveness. A significant difference was found in social play and cognitive play between the training and comparison groups. Children attending centres of training group caregivers made significant gains in levels of complex social play from pre- to post-test $F(1,28) = 18.38$, $p < .05$ as well as significant gains in levels of complex cognitive play from pre- to post-test $F(1,28)$ 5 6.15, $p < .051$. In contrast, the comparison group did not

make significant gains in complex social play and in complex cognitive play (Rhodes and Hennessy, 2001, p. 570-571).

Sheridan (2001) evaluated a 'competence development intervention' in 20 Swedish preschool units, by adopting ECERS as a tool for reflection and improvement of practices. The 'Model of Competence Development' evaluated in the study consisted of a combination of lectures, reflection in groups and pedagogical guidance (ECERS self-evaluation, reflective diaries and analysis of video-documentation). According to the results collected through ECERS external evaluation, the development work led to a higher quality in eight of the nine preschool units in the intervention group. While the quality of pre-schools before the intervention were evaluated as equal in the experimental and control group (4.50 and 4.49 respectively, p= 0.897), after the intervention there was a significant difference of quality between the preschool units between the experimental and the control groups of 4.98 and 4.18 (p = 0.010). In the daily work, the enhancement of quality was concretised in actions, in the interaction between the pedagogues and the children and in the pedagogical environment in such a way that it could be evaluated using the ECERS. The intervention enhanced quality despite a lower staff–child ratio, compared to control schools. Therefore, the authors concluded that, even in times of organisational changes and financial cutbacks, preschool quality can be enhanced through staff competence development.

Simon and Sachse (2011) evaluated the effects of the "Heidelberger Trainingsprogramm" on language-promoting behaviour of early childhood educators and their pupils (n=499 three and four year old children). The educators were filmed and later the material was coded using system developed by Bortz and Doring (2006). The study showed that the educators, who had few competences in language acquisition, increased their competences through the training programme, they used more opportunities to increase the active use of language by the children, they gave less language input themselves and the quality of their language input increased. Teachers in the intervention group scored higher than teachers in the control group in the observed dimensions related to applying language modelling techniques and corrective feedback and more time was allocated for children's verbal expression (effect sizes were Cohens d= -1.984 with regard to a language-promoting behaviour at the time of follow-up, and 1.248 with regard to language modelling). Furthermore, children's initiative in verbal interaction was significantly higher in the intervention group in the post-test and follow-up.

Sundell (2010) also included comparisons that encompassed the relationship between type of child care (profit or non-profit), staff: child ratio, age span in the class, teaching, and children's development. The sample included three to five year old children (N=394) from Swedish child care centres (N=32) (Sundell, 2010). The classes were visited twice, once in the autumn and then five months later in the spring. Data collection was spread over a two-year period (Sundell, 2010). It was demonstrated that programme auspice (profit and non-profit) and different ratios of staff to children (1:4.6—1:8.7) were not systematically related to children's social and cognitive achievements. The children's cognitive, verbal, and social achievements were best predicted by age, sex, social background, and the age span of the class. These findings, however,

may relate to context. In Stockholm, there are few differences between non-profit and profit child care, as they both comply with government-regulated demands for quality (e.g., hire trained teachers, carry out yearly evaluation and planning, are open for disabled and at-risk children) and they receive approximately the same subsidies as public centres. In addition, as stated by the author, 13 out of 16 profit-centre directors had worked earlier in public centres and none of them raised the prospect of earning more money as an important motive for starting such a centre (evidence also indicated that none of them had made a significant profit during the year in which the study was conducted). Therefore, the author explains the study findings in relation to the specificity of such context, affirming that the high level of agreement on teaching practice among staff might compensate for a decreased adult:child ratio.

Vandenbroeck et al. (2008 and 2013) assessed whether the comprehensive support programme offered to the directors of the Flemish-funded early child care centres in Brussels (n=89) encouraged changes in the availability, accessibility and enrolment of children from low-income, single-parent and ethnic minority families. The programme combined monthly training sessions with a trainer and coaching activities carried out within inter-professional exchanges with social and welfare workers. In addition, the training intervention was accompanied by policy measures enacted at municipal level that provided financial incentives to those centres that developed a policy of equal access. To test whether changes in priorities or in enrolment were related to participation in the programme, the centres were divided into four groups: non-participants (n=19); early participants (since 2007; n=29); middle participants (since 2008; n=23); and late participants (since 2010; n=18) (Vandenbroeck et al., 2013, p. 4). The findings showed that centre directors' awareness of social priority criteria changed, resulting in a significant increase in the enrolment of children from single-parent ($p < 0.001$) and ethnic minority families ($p < 0.05$) whereas no significant effects could be found in the enrolment of children from low-income families. In addition, inequality in relation to the availability of childcare places remained. The results support the hypothesis that policy measures, combined with training and ongoing support, can influence inequalities in enrolment rates.

Table 4.2 Summary of quality appraisal; weight of evidence

AUTHOR – YEAR – TITLE	AUTHORS' REPORTS OF FINDINGS	WEIGHT OF EVIDENCE			SOUNDNESS OF THE STUDY
		SELECTION BIAS	BIAS DUE TO LOSS TO FOLLOW-UP	SELECTIVE REPORTING BIAS	
Fukkink, R. and Tavecchio, L. (2010). Effects of Video Interaction Guidance on early childhood teachers.	Video feedback training for early childhood educators increases their socio-emotional support and verbal stimulation in childcare practice. A Video Interaction Guidance Training improved the interaction skills of early childhood education and care teachers and the training results were still apparent three months after the training.	**Avoided.** Participants were allocated using an acceptable method of randomisation. Groups are equivalent/balanced and this is assessed by using statistical tests.	**Avoided.** The attrition rate is reported separately according to allocation group. Baseline values of major prognostic factors were balanced between groups for all those remaining in the study for analysis.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study. Outcomes reported for all individuals/groups. Information for all outcomes collected at follow-up presented.	**Sound.** Study avoided all three of the specified types of bias.
Jensen, B. et al., (2013). Effectiveness of a Danish early year preschool programme: A randomized trial.	A new preschool intervention, the ASP Programme, had a positive effect on emotional symptoms, conduct problems, hyperactivity and inattention of children in Danish preschools, but not on peer relationships and pro-social behaviour. Although all effect sizes found were small (0.15-0.2), the effect sizes were larger in children of well-educated mothers when compared with low-educated mothers. The intervention did not decrease the	**Avoided.** Participants were allocated using an acceptable method of randomisation. Baseline values of major prognostic factors were balanced between groups.	**Avoided.** Attrition rate was reported separately according to allocation group and baseline values of major prognostic factors were balanced between groups for all those remaining in the study for analysis.	**Avoided.** Authors report on all outcomes they intend to measure as described in the aims of the study. Outcomes are reported on all individuals.	**Sound.** Study avoided all three of the specified types of bias.

	socioeconomic differences in the children, which was the original intention of the programme.				
Hayes, N. Et al. (2013). Evaluation of the Early Years Programme of the Childhood Development Initiative.	The 2 year Early Years Programme of CDI, showed no effect on child cognitive and language end-phase outcome scores. The findings show modest gains for the quality of the curriculum and activities provided in the services. In terms of outcomes for children, gains were indicated in areas such as improved behaviour and social skills, child attendance, and better speech and language prognosis on entry to school. The intervention improved the ability of those around the children to support their learning and development, and to interact meaningfully with children whether the setting was the home or the Early Years service.	**Avoided.** Participants were allocated using an acceptable method of randomisation. Groups are equivalent/balanced	**Avoided.** Attrition rate was reported separately according to allocation group.	**Avoided.** Authors report on all outcomes they intend to measure as described in the aims of the study. Outcomes are reported on all individuals.	**Sound.** Study avoided all three of the specified types of bias.
Beller, S. et al. (2007/2009). Enhancing the quality of language stimulation in ECEC institutions to increase educational outcomes for 4 and 5 year old	Children: Positive impact on language development of children of 4 years old. No significant impact on language skills of children of 5 years old. No significant impact on cognitive skills of children.	**Avoided.** Participants were allocated using acceptable method of randomisation.	**Avoided.** The study reports that there were no drop-outs.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aim of the study.	**Sound.** Study avoided all three of the specified types of bias.

children from families with low SES and immigrant background. A pedagogical intervention model. (Linked study, Translation from German)	Teachers: professionals of the intervention group also showed a more positive educational behaviour in 3 out of 4 areas measured; no significant effect was observed on responsiveness	Baseline values of major prognostic factors were balanced between groups or analysis adjusted. Invalid data were statistically controlled.		Outcomes are reported for all individuals/subgroups.	
Evanschitzky, P. Et al. (2008). Mathematics, science and technology in kindergarten. Study of the impact of an in-service training for kindergarten teachers. (Translation from German)	Children in the intervention kindergartens showed faster/more advanced development of mathematical concepts than children in the control kindergartens. Children in the intervention group show an increased interest in numbers and other mathematical concepts, whereas these changes were not found in the control group.	**Avoided.** Authors controlled it with OSTZ.	**Avoided.** The study reports that there were no drop-outs.	**Avoided.** Extensive and well elaborated reporting.	**Sound.** Study avoided all three of the specified types of bias.
Franco Justo, C. (2008). Programme of relaxation and self-esteem improvement in kindergarten teachers and their relationship with the creativity of their students.	This study showed effects of a program on relaxation on teachers' performance, level of anxiety and self-esteem. It also showed increase in graphical flexibility of children.	**Avoided.** Participants were selected randomly.	**Avoided.** All participants participated in both surveys.	**Avoided.** The authors described the results and the outcomes clearly and very objectively.	**Sound.** Study avoided all three of the specified types of bias. The study was a little experimental, but brought some ideas

(Translation from Spanish)					about the implications of the anxiety, self-esteem of teachers
Sundell, K. (2000). Examining Swedish profit and non-profit child care: The relationships between adult-to-child ratio, age composition in child care classes, teaching and children's social and cognitive achievements.	Profit child care centres had larger child groups than non-profit child care centres, a lower adult: child ratio, and a positive staff attitude toward teaching goals. Age, gender, social background, and age span of the child care class were significant predictors of children's social and cognitive achievements. Adult-to-child ratio and teaching style did not prove to be good predictors of children's social or cognitive achievements.	**Avoided** Participants were selected using a simple random sample method. Major prognostic factors were reported for the subjects in the study.	**Avoided.** Attrition rate reported. Attrition rate = 0% (N=394).	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study.	**Sound.** Study avoided all three of the specified types of bias. There were no drop-outs. The study avoided selective reporting bias, because authors reported on all outcomes they intended to measure as described in the aims of the study.
Simon, S. and Sachse, S. (2011). Promoting language skills in day care. Can interaction training improve childhood educators' language-promoting behaviour? (Translation from	The training led to gains in speech productivity and heightened complexity of the children's verbal utterances through improvement in the early childhood educators' language interaction behaviour. Tests revealed that the intervention benefitted the semantic skills of the children at the lowest competence level.	**Avoided.** Authors corrected the selection bias	**Avoided.** Attrition rate is reported and there was very few loss (137/ 117).	**Avoided.** Extensive reporting on all aspects.	**Sound.** Study avoided all three of the specified types of bias.

German)	The joy of speaking was significantly higher in the group of children of which the educator followed the training. The time that the children of this group talked also increased significantly. The educators, who had few competences on language acquisition, increased their competences through the training program, they used more opportunities to increase the active use of language by the children, they gave less language input themselves and the quality of their language input increased.				

Rhodes, S. Hennessy, E. (2001). The effects of specialized training on caregivers and children in early-years settings: An evaluation of the foundation course in playgroup practice.	Caregivers who received a 120-hour preschool training course made significant gains in positive relationship and decreased in levels of detachment. The children in their care made significant gains in complex social and cognitive play from pre- to post-training. The comparison group adults and children showed no significant improvements from pre- to post-test times.	**Avoided.** The study was based on a pre- and post-test control group design without random assignment (i.e. non-equivalent control group design). Baseline values of major prognostic factors are reported for each group for virtually all participants as allocated and baseline values of major prognostic factors are balanced between groups. The equivalence of the groups was assessed by comparing descriptive data.	**Avoided, to some extent.** Attrition rate is reported separately according to allocation group and the attrition rate is less than 30% overall. But the attrition rate differs across groups by more than 10% [attrition rate for training group = 0%, attrition rate for control group=29%] and there is no information if the baseline values of major prognostic factors were balanced between groups for all those remaining in the study for analysis.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study. Information on outcomes for all individual groups was reported.	**Sound, despite discrepancy with quality criteria.** The study avoided two of the specified types of bias (selection bias and selective reporting bias), but only partially avoided the bias due to loss to follow-up.
Sheridan, S. (2001). Quality evaluation and quality enhancement in preschool: A model of	Quality in preschools can be enhanced through competence development at the same time as there are organizational changes and financial	**Avoided, to some extent.** Randomised but no	**Avoided, to some extent.** In the third stage of	**Avoided.** Authors report on all outcomes they intended	**Sound, despite discrepancy with quality criteria.**

competence development.	cutbacks. According to the results, as evaluated by the ECERS and the participant questionnaire, the development work has led to a higher quality in eight of the nine preschool units The results also show that structural aspects of quality are of great importance for the quality, but no guarantee for it. Of importance to quality in preschool are good physical and material conditions as well as a high awareness and professionalism on the part of the pedagogue.	details provided.	the study a new evaluation of quality with the ECERS was conducted on 19 of the original 20 preschool units by three observers. One unit was eliminated as both pedagogues and children who participated in the first evaluation changed.	to measure as described in the aims of the study.	The study clearly avoided selective reporting bias, but didn't provide details about the method for randomisation. Also, one preschool unit was eliminated in the third stage of the study.
Vandenbroeck, M. Et.al. (2008/2013). The impact of policy measures and coaching on the availability and accessibility of early child care: A longitudinal study. (Linked study)	Policy measures, combined with support, can influence inequalities in enrolment rates. While inequality in availability has remained in the centres studied, centre directors' awareness of social priority criteria has changed, resulting in a significant increase in the enrolment of children from single-parent and ethnic minority families, and – to a lesser extent – an increase in the enrolment of children from low-income families.	**Avoided, to some extent.** Participants were not allocated using randomisation. Baseline values of major prognostic factors were provided. No comparison groups.	**Avoided, to some extent.** Attrition rate is reported. The number of settings increased significantly over time because more centres joined.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study.	**Sound, despite discrepancy with quality criteria.** Study clearly avoided one type of bias (reporting bias). It also avoided, to some extent, selection bias and bias due to loss to follow-up.

Buschmann, A. and Jooss, B. (2011). Language promotion in day care facilities for children: Effectivity of a speech-based interaction training for educational professionals (Translation from German).	Children whose teachers had participated in the interaction training showed a significantly increased vocabulary and significantly better results in the standardised language developmental test at the age of 30 months.	**Avoided, to some extent.** It is unclear why they chose the cities Heidelberg and Stuttgart. There is a good and systematic recruitment process, but, to have a bigger sample, they raised the scores on the selection tests with 5 percentile rank.	**Avoided, to some extent.** There were no drop outs (28 children on both pre and post-test). But it is unclear why 5 children that were selected and approved eventually didn't take part in the study.	**Avoided, to some extent.** The authors reported on all outcomes they intended to measure. However, the findings are not well elaborated.	**Sound, despite discrepancy with quality criteria.** To some extent, the study avoided the three types of bias. However, the findings are not well elaborated, some selection criteria are unclear and it is also not clear w why 5 children that were selected and approved eventually didn't take part in the study.
Blatchford, P. Et.al. (2001/2002). Relationships Between Class Size and Teaching: A Multimethod Analysis of English Infant Schools. (Linked study)	There is a clear causal effect of class size on children's achievement and children's academic attainment over the reception year, both before and after adjusting for possible confounding factors. Our results show, overall, that in smaller classes here is more individualized teacher support for learning.	**Avoided.** Participants were selected using an acceptable method of randomisation.	**Not avoided.** Attrition rate was not reported.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study.	**Sound, despite discrepancy with quality criteria.** Study has avoided two of the specified types of bias (selection bias and selective reporting bias). However, there is not enough information to assess

					the selective reporting bias, because the attrition rate is not reported in the study.
Palmerus, K. (1996). Child-Caregiver Ratios in Day Care Centre Groups: Impact on Verbal Interactions	In day care centre groups with a high ratio, the proportion of child-initiated verbal activities to the caregivers decreases while the proportion of adult-initiated verbal activities increases. Also, with a high ratio, the amount of verbal interaction between caregivers reduces. Caregivers with many children to take care of use verbal communication as a tool for control and dominance in the group.	**Not avoided.** It is unclear which type of selection was used for selecting the sample. Baseline values of major prognostic factors were not reported for participants.	**Avoided.** Bias due to loss to follow-up was avoided, because there were no drop-outs.	**Avoided.** Authors report on all outcomes they intended to measure as described in the aims of the study. Outcomes reported for all individuals.	**Sound, despite discrepancy with quality criteria**. Study avoided two of the specified types of bias (bias due to loss to follow-up and selective reporting bias), but not enough information is provided concerning the selection bias.

Synthesis of impact studies on CPD

Table 4.3 Components of CPD interventions studied in relation to ECEC quality, staff-child interactions and children's outcomes

CPD INSTRUCTIONAL CHARACTERISTICS			EVIDENCE OF IMPACT		
			ECEC QUALITY	STAFF-CHILD INTERACTIONS	CHILDREN'S OUTCOMES
TRAINING INTEGRATED INTO ECEC CENTRES' PRACTICE	WITH FEEDBACK COMPONENT	Short term intensive training interven-tions with video-feedback component		Positive impact on practitioners' language stimulation performance (Beller 2007-2009)* Positive impact on practitioners' performance: stimulating caregiving and verbal stimulation. (Fukkink and Tavecchio, 2010)* Positive impact on practitioners' performance: use of language modelling techniques, corrective feedback and time allocation for children's verbal expression. Combined with positive impact on children's initiative in verbal interaction (Simon and Sachse, 2011)*	Overall positive impact on children's language and cognitive development of the children irrespective of their ethnic background or family language, although no impact on outcomes of 5 years old children subgroup (Beller, 2007-2009)* Positive impact on children's vocabulary and language development outcomes (Buschmann and Joos, 2011)**
		Long-term interven-tions with group workshops and ongoing support	Positive impact on curricular / planning quality and on quality of literacy environment* (Hayes et al., 2013) Positive impact on environmental and pedagogical quality (Sheridan,	No impact (Hayes et al., 2013)*	Positive impact on children's cognitive outcomes related to pre-mathematical skills (Evanschitzky et al., 2008)* No impact (Hayes et al., 2013)*

		component (pedagogical guidance and coaching in reflection groups)	2001)** Positive impact on accessibility of ECEC services for children from single-parent and ethnic minority families. No impact on accessibility for low-income families and on availability)** (Vandenbroeck et al., 2008-2013)		Positive impact on children's emotional symptoms, conduct problems, hyperactivity and inattention. No impact on peer relationships and pro-social behaviour (Jensen et al., 2013)*
	NO FEED-BACK COMPO-NENT	Short-term intensive training interven-tion		Positive impact on practitioners' performance: increased positive relationship and decreased level of detachment. No impact on punitiveness and permissiveness (Rhodes and Hennessy, 2001)**	Positive impact on children's social play and cognitive play (Rhodes and Hennessy, 2001)**
TRAINING NOT INTEGRATED INTO PRACTICE		Off-site short-term intensive training			Positive impact on children's outcomes in relation to graphical flexibility. No impact on graphical fluidity and originality (Franco Justo, 2008)*

** study judged sound ** study judged sound despite discrepancy with quality criteria*

The question addressed in the in-depth review of CPD studies concerns the impact of in-service training interventions on ECEC quality, staff-child interaction and children's outcomes. First, we intended to determine whether CPD provision would make a contribution to the quality of educational experiences offered to children within early years settings and to which extent these would foster children's cognitive and non-cognitive development. Secondly, we aimed to establish patterns between CPD components and their reported so that information could be drawn in regard to the effectiveness of certain intervention.

All studies included in the in-depth review showed that CPD had a positive impact on at least one of the outcome studied.

In three studies, short-term intensive interventions integrated into ECEC centres' practice through video-supervision have been found to be effective in fostering practitioners' stimulating caregiving and language stimulation (Beller, 2007-2009; Fukkink and Tavecchio, 2010) which in turn has a positive impact on children's initiative in verbal interaction (Simon and Sachse, 2011). Evidence of the impact of such training interventions on children's outcomes have also been found in two studies documenting significant gains in terms of language acquisition and cognitive development (Beller, 2007-2009; Buschmann and Joos, 2011). The retention of training effects was reported in only one study (Fukkink and Tavecchio, 2010) in which a post-intervention measure was carried out after three months, whereas long term impact of CPD was not reported in any of the studies. Out of the four studies in which evidence in favour of the effectiveness of video-supervision training interventions have been found, three were conducted within public ECEC centres in Germany (with two studies evaluating the same programme[8]) while one was conducted in a context of private-subsidised provision in the Netherland. Given that the limited number of studies available were mostly carried out in one country, evidence from such studies might not be generalisable beyond national boundaries.

Long-term CPD interventions integrated into practices through the provision of staff ongoing support, such as pedagogical guidance and coaching in reflection groups, have been proven to be effective in five studies, which are more heterogeneous in terms of geographical location. In the Danish and Swedish studies (Jensen, 2013; Sheridan, 2001), the CPD interventions examined were embedded in comprehensive public systems characterised by a well-established pedagogical tradition to the qualification of ECEC services ('systematic quality work'), whereas in the study from Ireland (Hayes, 2013) the training intervention studied was part of a two-year funded Early Intervention Programme (PEIP) embedded in a context were ECEC provision tends to be patchy, fragmented and scarcely subsidised. Two studies were carried out in continental Europe, namely in Belgium (Vandenbroeck et al., 2008-2013) and Germany (Evanschitzky et al., 2008), in contexts where ECEC provision is mixed (mostly public and private NFP) but publicly-

[8] Heidelberger Trainingsprogramm zur frühen Sprachförderung in Kitas

subsidised. The heterogeneity of the CPD interventions studied as well as of contexts within which such initiatives took place makes it difficult to compare findings. However, it can certainly be stated that long-term pedagogical support provided to staff in reflection groups was found to be effective in enhancing the quality of ECEC services (Hayes et al., 2013; Sheridan, 2001; Vandenbroeck et al., 2008-2013) as well as in improving children's cognitive and social development.

Very limited evidence was found in regards to the impact of short-term integrated training interventions without a feedback component and in regard to the impact of training interventions that are not integrated into practices. As only two studies, from Ireland (Rhodes and Hennessy, 2001) and Spain (Franco Justo, 2008), were found for each case, we refer the reader to the previous section for further details on their findings.

To conclude, the in-depth review of CPD impact studies identified gaps in relation to:

- the impact of short-term training interventions integrated into ECEC practices without video-feedback component (no evidence found);
- the impact of long-term interventions integrated into practices through the provision of staff ongoing support on staff-child interactions (limited evidence found, only one study);
- the impact of integrated short-term intensive training interventions without feed-back component (limited evidence found, only one study that was judged sound despite discrepancy with quality criteria);
- the overall impact of long-term and short-term training interventions that are not integrated into practices (limited evidence found, only one study);
- the evaluation of long-term impact of CPD interventions (retention of training effects).

Synthesis of impact studies on working conditions

Only four studies included in the in-depth review evaluated the impact of working conditions on ECEC quality (Hayes et al., 2013), staff-child interactions (Palmerus, 1996; Hayes et al., 2013) and children's outcomes (Blatchford et al., 2001 and 2002; Hayes et al., 2013; Sundell, 2000).

Evidence on the impact of staff:child ratio on staff-child interactions were found in only one study, carried out in Sweden (Palmerus, 1996), whereas no impact was found in the study carried out in Ireland (Hayes et al., 2013) which evaluated the effects of staff:child ratio as one of the components of a two-year funded Early Intervention Programme (PEIP). In the latter case, findings from CPD and WC components could not be disentangled. However, within the same study it was demonstrated that the environmental quality of ECEC settings improved as an effect of the combined intervention, suggesting that the staff:child ratio component might have played a role.

Strong evidence on the effects of class-size on children's academic attainment were found in the Class Size Project (Blatchford et al., 2001 and 2002) conducted in reception classes in England. Despite the fact that this study provides the most extensive prima facie evidence for the existence of a real causal effect of class size on achievement, the authors warn that results may not generalise to other parts of the UK where education policy and practice varies, and therefore generalisation of results beyond national boundaries would not be appropriate. Similar concerns were expressed in the study evaluating the effects of staff:child ratio in ECEC centres in Sweden (Sundell, 2000). The study found no evidence of impact of staff:child ratio on children's cognitive, verbal, and social achievements. However the author warns about the generalisation of results, stating that in the context studied the high degree of consensus among teachers and assistants concerning specific goals and the ways to accomplish them might have compensated for a decreased adult:child ratio.

To conclude, given the paucity of reliable evidence on staff working conditions our review was unable to address the question concerning their impact on ECEC quality, staff-child interaction and children's outcomes.

Results: views studies

Chapter 5 describes narratively the findings of the in-depth synthesis of views studies concerning the effects of CPD initiatives and working conditions on practitioners (knowledge, practice and understandings), on their interactions with children and on children's learning and socialising experiences. The chapter is structured in two parts. In the first part, we provide an overview of included studies by describing their features in terms of geographical location, research design and characteristics of the CPD intervention or working condition studied. In the second part, we analyse how practitioners, as result of taking part in CPD, reported changes to their professional knowledge and understandings, as well as to their pedagogical practice, contributing to improved overall quality of ECEC provision.

Overview of studies selected for the in-depth review

Of the 41 views studies described in the mapping phase, 32 studies (78%) were included in the qualitative in-depth synthesis. Nine studies (22%) reporting qualitative findings in relation to the effects of CPD or WC were excluded from the in-depth synthesis on the basis of study design or methodological rigour criteria (low 'usefulness' and 'reliability' of reported findings).

One quarter of the studies included in the qualitative in-depth synthesis were from UK (Ang, 2012; Aubrey et al. 2012; Blatchford et al., 2001, 2002; Blenkin and Hutchin, 1998; Jopling et al., 2013; Menmuir and Christie, 1999; Potter and Hodgson, 2007; Wood and Bennett,2000), six were from Portugal (Cardoso, 2012; Craveiro, 2007; Leal, 2011; Lino, 2005; Peixoto, 2007; Oliveira-Formosinho and Araújo, 2011), five were from Ireland (Bleach, 2013; Hayes et al., 2013; McMillan et al., 2012; Share et al., 2011; SQW, 2012) and a further five from Sweden (Asplund Carlsson et al., 2008; Johansson et al., 2007; Rönnerman, 2003; Rönnerman, 2008; Sheridan et al., 2013). Two were from Belgium (Peeters, 1993; Peeters and Vandenbroeck, 2011). The remaining six studies were carried out in Croatia (Vujičić, 2008), Germany (Richter, 2012), Italy (Picchio et al., 2012), the Netherlands (Van Keulen, 2010), Slovenia (Vonta et al., 2007) and Spain (Sandstrom, 2012).

The findings from views studies focused overwhelmingly on the effects of CPD initiatives, reported in thirty studies, whereas findings on the effects of working conditions were reported in only two studies (Blatchford et al., 2001-2002; Sandstrom, 2012). Interestingly, both studies reporting findings on working conditions were carried out as mixed-methods studies.

The methodological characteristics of the views studies included in the in-depth review varied greatly both in terms of research design and in terms of methods used for data collection and analysis. Fourteen studies (including the two on WC) adopted a participatory approach to the evaluation of CPD initiatives or working conditions investigated. The findings reported in such studies were usually drawing on the analysis of data collected through open-ended questionnaires, semi-structured or in-depth interviews, focus groups, reflective diaries, participant observations in ECEC settings and audio-video recording of pedagogical practice. Fifteen studies adopted an action-research approach that involved practitioners in the process

of data collection and analysis. Therefore findings in these cases were co-constructed with practitioners taking part to the action-research/CPD initiative reported and they were mostly drawing on data sources such as action plans, written accounts of practitioners' and children's experiences in ECEC settings, reports of group meetings and audio-video documentation. Descriptive case study designs were adopted in just three studies reporting findings on the effects of CPD initiatives on practitioners' knowledge and understanding, as well as on their professional practices (Craveiro, 2007; Menmuir and Christie, 1999; Oliveira-Formosinho and Araújo, 2011).

The findings on CPD reported in the narrative synthesis below refer to a wide range of training initiatives, which differed in terms of delivery modes, scope and duration. However, all studies reported findings on the effects of CPD programmes that were integrated into ECEC practices through a combination of training sessions and follow-up activities in the settings. In particular, twenty-two studies investigated integrated programmes in which training sessions were accompanied by coaching or supervision activities providing practitioners with the opportunity to exchange reflections and receive feedback on practice. The high number of view studies exploring CPD programmes accompanied by follow up activities such as coaching, supervision and collective reflection is partly due to the fact that in action-research designs revision and transformation of practices are integral parts of the research process which is carried out as a joint activity involving practitioners and researchers together. In this research design, the boundaries between the processes of CPD implementation and research investigation are less marked than in impact studies.

Furthermore, the majority of CPD initiatives reported in those views studies included in the in-depth synthesis refer to long-term programmes lasting from six months to one year (11 studies) or longer (13 studies). In six studies, however, the length of the CPD programme investigated was not clearly specified.

A full description of the methodologies and characteristics of the included studies about continuing professional development is given in Appendices 4-7.

Narrative synthesis of views studies on CPD

Effects of CPD initiatives on practitioners' knowledge and understandings

An overarching finding was that CPD improved participants' sense of confidence in themselves as practitioners and leaders in ECEC services (Ang, 2012; SQW 2012; Hayes et al. 2013, Sheridan et al., 2013; Richter, 2012). Through the demands of the CPD programmes and reflective tools used, practitioners increased their pedagogical awareness and professional understandings which in turn allowed them to strengthen their capacities and address areas for improvement (Ang, 2012; Menmuir and Christie, 1999; Rönnerman, 2003; Hayes, et al., 2013).

The key findings of an impact evaluation of the 'National Professional Qualification in Integrated Centre Leadership' (Ang, 2012) revealed that attending the programme not only enhanced

participants' knowledge and understanding of their leadership role, but also helped them to further develop their skills and to more clearly define their values and beliefs. The increased confidence and awareness experienced by the leaders who attended the programme in turn had an impact on the way they were able to orient and support decision-making processes within their settings, which resulted in an improvement in the quality of teamwork, as well as on the way they engaged in partnership with local agencies and community stakeholders.

Increased skills and ability to reflect upon practices, as well as increased confidence in ability, skills and practices were also reported as the main effects of the 'Coordinated Mentoring Support Programme' aimed at facilitating the implementation of the Irish National Quality Framework in Early Years Education (Síolta). In particular, the Summary Evaluation of the programme states: 'practitioners were better able to articulate and demonstrate practices' and 'showed an increased ability in transferring/connecting theory to practice' as well as a 'greater awareness and understanding of quality' (SQW, 2012, p. 83). Similarly, Richter (2012), describing the effects of a training initiative directed towards improving staff competency in enhancing science education in day-care centres in Germany ("*Versuch macht klug*") reports that, as result of the training, teachers experienced a positive development with regard to interest, frequency of experiments, self-concept and expertise. In addition, research findings indicated that the effects of training on teachers' practice persisted six months after the end of the programme.

Sheridan's et al. (2013) study of the effects of 'systematic quality work' in ECEC services in Iceland, Sweden and Norway reported that the knowledge gained by teachers through the analysis of pedagogical documentation and the systematic evaluation of educational practice made them more aware of their competence and of the quality of their work. It gave teachers an insight into where their work leads and why. The author states that such initiatives foster teachers' abilities to take into account multiple theoretical perspectives, to critically reflect on educational policies and curriculum intentions, enabling teachers to create new understandings of how systematic improvement of pedagogical work can be achieved in the ECEC settings where they are employed (Sheridan et al., 2013, p. 147).

Menmuir and Christie (1999) found that attending a training module on 'Children's Development and Learning', which adopted a Repertory Grid in order to elicit the constructions used by practitioners to describe children's experiences, had clearly encouraged participants to challenge their own understandings and to co-construct new professional knowledge by discussing and negotiating the meanings emerging from the analysis of the grids.

A crucial aspect of CPD provision in influencing practitioners' increased pedagogical awareness and deepened reflectivity is the active involvement of participants in transformative processes for the improvement of educational practices within ECEC settings. By engaging in research-based enquiry practitioners can critically explore the link between theory and practice in their everyday work and this gives them the possibility to identify and address the gaps between intended pedagogical principles and enacted practices (Wood and Bennett, 2000; Johansson, 2007; Lino, 2005). Furthermore, involving practitioners in a process of change where they have

the opportunity to be agentic actors, not only has an impact on their practical knowledge but also on their professional attitudes and understandings (Peeters, Vandenbroeck, 2011; Rönnerman, 2003 and 2008; Blenkin and Hutchin, 1998). One of the most salient effects of professional development, especially when accompanied by guidance, is the empowerment of practitioners to question taken-for-granted assumptions that underlie their enacted practices. Rönnerman (2003) found that 'by letting the teachers find their own questions and by letting the question guide them in searching from new knowledge about their practices, the teachers retain authority over their improvement of practices' (Rönnerman, 2003, p. 17), and this, in turn, strengthens their professional competence. Several studies found that taking part in CPD led practitioners to reconceptualise their role as educators (Blenkin and Hutchin, 1998; McMillan et al., 2012; Potter and Hodgson, 2007; Rönnerman, 2003; Sheridan et al., 2013; Vujičić, 2008; Wood and Bennett, 2000). In some cases, such as where the focus of the CPD increased opportunities for reflective thinking, a reassessment of the role of the educator was seen as a successful outcome of participation in training.

Potter and Hodgson's (2007) study of a training course designed to promote the key skill of reflection was focused on enabling children to take a greater lead in interaction. Study participants rapidly realised that their practice role needed to be subject to wider examination, such that their role was 'to act as facilitators rather than directors of play sessions'(Potter and Hodgson, 2007, p. 505). Similarly Rönnerman (2003) found that action research carried out in connection to the curriculum led to changes in how teachers understood their roles: 'they are now more observant of the children's own curiosity … and are not so eager to plan the children's play or activities. Instead the teachers support the children's way of wanting to know by challenging their thinking and acting' (Rönnerman, 2003, p. 19).

Wood and Bennett's (2000) account of participatory research focusing on the relationship between play and learning also found that respondents had rethought their role as educators. One said that she had 'rethought things ... because it was just too disorganised and I couldn't run my classroom like that'… the study 'has been very helpful in developing my thinking about play and helping me reflect on my classroom practice' (Wood and Bennett, 2000, p. 641). Another study participant had decided to 'allocate a daily session for free play, based on the High/Scope plan-do-review approach … which also allowed more time for observation and interaction. As a result … the quality of play had improved significantly and she was better able to justify what the children were learning'. She reflected that 'I've changed my theory and my practice … I've gone away from "choosing time" towards planning time … its upped the quality of what is happening and upped my knowledge of what's happening' (Wood and Bennett, 2000, pp. 641-2).

Finally, McMillan's et al. (2012) study of the effectiveness of a social constructivist based professional development model that incorporated written material alongside tutor support in Ireland found that one main outcome was 'the evolution of participants' views on early years pedagogy and, specifically, on their role within it'. Practitioners agreed that their understanding of how children learn 'had changed as a result of participating in the project', and particularly

how to implement changes in practice. One participant said: 'I think [participating in the programme] made us better practitioners. I think it made us more reflective of our work. I think it made us realise the importance of the children's views and how they can give information and participate in the curriculum and the activities' (McMillan et al., 2012, p. 402).

In parallel with rethinking their own role, practitioners also began to reconceptualise children as protagonists of their own learning (Cardoso, 2012, p.297; Sheridan et al., 2013, p. 139). Sheridan et al. (2013) reported that Swedish teachers' perspective was that they had developed the competence to document children's learning rather than their participation in activities. Documentation is also a tool for making children's competence visible, and so helps teachers in the ongoing improvement of their educational action. Cardoso (2012), reported the effects of a CPD programme carried out in a community ECEC centre through an action-research process and highlighted how practitioners changed their view of the children from spectators into participating children (Cardoso, 2012, p. 297). This implied a change in their practices, particularly in the organisation of the educational environment (space and time) within the setting. The way in which they planned and assessed practice also changed, reflecting a shift towards an approach focused on listening to children. The role of play was reconceptualised from something that children 'naturally' do (without the involvement of the adults) towards something that gives children the possibility to intervene directly in the everyday pedagogy and supports their possibilities to invent and find out about the world. The CPD also had the effect of increasing coherence between discourses and practices. The author identified the following key success factors: i) starting with the participants' views and practices to identify real problems and areas of change; ii) participation in decision making in the process of change; iii) the importance of pedagogical references, quality instruments, documentation and reflection to find out pedagogic incoherence; and iv) allow a slow process of change to take place. Both Sheridan et al. (2013) and Cardoso (2012) emphasise that CPD is a complex process involving the institution as a whole.

Menmuir and Christie's (1999) study of generating reflective thinking through workplace learning concluded that 'it was clear that all participants had found that the exercise had made them think more about the children or think about them in different ways' (Menmuir and Christie, 1999, p. 71). Furthermore the programme evaluation confirmed that the participants' set of constructs concerning children's experiences in the setting became progressively more complex over the whole duration of the training. In the case of Potter and Hodgson's (2007) study, the practitioners, after a second week of training, 'made a decision to just step right back and just observe the children. It was just absolutely fascinating and we then gave the support where they needed it. I think it allowed the children to run their own session … we've empowered children' (Potter and Hodgson, 2007, p. 505).

Share's (2011) study of a structured training programme focused on increasing parental involvement in children's education also referred to 'encouraging children's autonomy' albeit with varying success (depending on the characteristics of individual settings) (Share, 2011, p.57). A study of a HighScope programme implemented in Ireland (SQW 2012), based on active

participatory learning, had led to a greater understanding of children as holders of rights. A respondent in Wood and Bennett's (2000) study, which also followed implementation of HighScope, referred to the way in which rethinking the adult role led to 'the realisation that some teacher prescribed activities are changed completely by the children, the teacher may have an aim in mind, children may become engrossed in the activity and follow their own ideas through' (Wood and Bennett, 2000, pp. 643-644). Finally, Blenkin and Hutchin's (1998) study adopted an action-research approach to foster context-based professional development, and found that practitioners' understanding and perceptions of individual children, as well as of children's learning and socialising experiences within the peer group, changed dramatically as a result of their engagement in systematic observation. In turn, perceptual changes about children's abilities led practitioners to reconsider their role in interacting with children during play in order to scaffold child-initiated learning processes more responsively.

Engaging in CPD in highly socio-culturally diverse ECEC contexts can lead practitioners to refocus on children's needs and potential and reconceptualise the role of parental involvement. For example, Oliveira-Formosinho and Araújo (2011) summarised the effects of a praxiological-research CPD intervention. This study reported that practitioners started to view 'listening to children as an important dimension that supported activity and projects' and 'listening to parents as a strategy to develop daily life in the classroom in a pluralist way' (Oliveira-Formosinho and Araújo, 2011, p. 8). Similarly, findings from participatory action-research carried out in Flanders (Peeters, Vandenbroeck, 2011) highlighted that practitioners became progressively 'more interested in the way parents educate their young children at home and in questioning how the childcare centre could take on some of the practices of the parents' (Peeters, Vandenbroeck, 2011, p. 67). Through these processes, children were increasingly considered as active citizens who could decide upon important aspects of the daily life in the childcare centre. Similarly, practitioners attending action-research CPD in Croatian pre-schools (Vujicic, 2008) stated that, as a result of participating in the programme, 'we dared to have full confidence in our children and we showed this to them. They accepted it, showing us daily that many of our beliefs concerning their (non)abilities and (im)maturity are in fact professional misconceptions, and surprising us with daily amounts and intensity of their abilities and knowledge' (Vujicic, 2008, np).

Particular CPD tools were attributed to impacts on the quality of practice. These were tools that helped practitioners to be reflective thinkers, identified in several studies as a key ingredient in a cycle that usually included observation, documentation, action and review. Ang's (2012) study highlighted the use of journals as a specific aspect of the training which was found particularly useful and on which centre leaders continued to draw in their work with partner agencies as a tool facilitating inter-professional work.

Findings from Bleach's (2013) study in Ireland found that the action-research cycle of planning, acting, observing and reflecting provided the structure for the project team to manage and support the implementation of Sìolta (National Quality Framework) and Aister (Early Childhood Curriculum Framework) in ECEC settings. The action plan designed as a CPD tool not only helped

practitioners to develop methodological skills such as planning and evaluation, required to improve the quality of teaching and learning processes within their centre, but it also contributed to raising practitioners' awareness of the importance of such skills, which resulted in increased engagement in planning, preparation, monitoring and revision activities.

One of the main effects of documentation based CPD training in the Italian city of Pistoia reported by Picchio et al. (2012) is practitioners' increased competence in the use of methodological devices for analysing and improving the quality of children's everyday experiences in early childhood settings. The teachers confirmed that the competent use of written documentation of children's experiences within the setting (Weekly and Process Report) allowed them 'to grasp more fully the aspects of continuity and change' underlying the ongoing development of learning interactions occurring in the centre and it enabled them 'to re-direct educational practices' more responsively (Picchio et al., 2012, p. 164). However, the study findings also reported that the implementation of documentation practices was difficult to sustain in contexts where practitioners were not adequately supported in terms of working conditions, in particular, non-contact time granted for compiling, analysing and discussing the reports collectively.

Vonta et al. (2007) found that reflection and self-evaluation was the biggest challenge in the process of professional development carried out as action and developmental research within Slovenian pre-schools. Practitioners viewed the quality of self-evaluation and self-reflection as closely related to the creation of new professional knowledge. Preschool teachers recognized professional portfolios as an important tool for sustaining professional development, combined with CPD mentors who encouraged them, observed them and provided feed-back as well as advising them about possible changes to be introduced in their professional work with children.

Effects of CPD initiatives on practitioner's practice

Most studies analysed so far – albeit not all of them – link the chief benefits of CPD in terms of practitioners' increased pedagogical awareness, practical knowledge, methodological skills and questioning attitude to the improvement of enacted practices within ECEC settings. The improvement of educational practices documented in research findings broadly referred to the enhanced quality of ECEC settings which unfold in several dimensions. For the purpose of this analysis on the impact of CPD on ECEC quality, two mains areas of improvement were identified. The first is about practices related to the development, implementation and ongoing revision of the curriculum, while the second area of improvement refers to the impact of CPD on collegial work, including inter-professional collaboration and parents' engagement in decision-making processes.

Curriculum development, implementation and innovation

Interventions guarantee change in the quality of practitioners' practice. Context based training with an emphasis on ECEC pedagogy and supervision of teachers has more effect on overall quality of the setting than a traditional course that perceives CPD as an individual process based on acquiring sound theoretical foundations without a concern about the specific ECEC context.

An action-research project based on building bridges between research and practitioners showed that practise-based research can be a tool that highlights high quality pedagogical practice, and this can, in turn, raise the status of the ECEC service in the eyes of the public and policy makers (Johansson, 2007, p. 161).

Two studies report that the first year of a long time CPD intervention (2 and 5 years) is a 'bedding-in' period with rather limited effects on the pedagogical practice, while during the second year there are significant effects on practitioner's practice (Hayes, et al., 2013; Peeters, 1993).

In regard to this area of improvement, the studies analysed reveal that the systematic use of methodological tools, such as observation and documentation of children's experiences, action plans, diaries, portfolios and analytical grids, supported the enactment of educational practices that are more responsive of children's needs, potentialities and learning strategies.

In first instance, this translates into enhanced practitioners' intentionality that is explicitly displayed in activity planning and evaluation as the results of their increased pedagogical awareness. For example, an action plan quoted by Bleach (2013) states that as a result of the CPD, there was 'more planning and preparation for play as [the] preschool day [was] shorter due to [a] free preschool year. This will need to be reviewed and monitored over next couple of months' (Bleach, 2013, p. 374). One of the main benefits of practitioners' involvement in action-research initiatives was the planning, implementation and evaluation of learning initiatives based on children's needs rather than on pre-determined choices made by practitioners (ibid.). Similarly, Oliveira-Formosinho and Araújo (2011) reported that: 'the development of systematic observations that identified children's interest and motivations allowed for educational planning that departed from children and not from an abstract child.' (Oliveira-Formosinho and Araújo, 2011, p. 8). In this case, educators' increased awareness of the importance of listening to children, coupled with their enhanced competence in observation strategies, allowed them to enact educational practices that were more supportive of children's agency in experiential learning situations.

The elaboration of more responsive educational and strategies for enhancing children's learning were highlighted as one of the main effects of CPD in 15 studies (Asplund Carlsson et al., 2008; Blenkin and Hutchin, 1998; Jopling et al., 2013; Leal, 2011; McMillan et al., 2012; Picchio et al., 2012; Rönnerman, 2003 and 2008; Share, 2011; SWQ, 2012; Vujičić, 2008; Hayes, et al., 2013; Johansson, 2007, Richter, 2012, Cardoso, 2012).

Jopling's et al. (2013) study of the impact of training associated with the 'Early Talk' programme, highlighted that the participating centre's curriculum changed. After training there was: 'more detailed and more precise child assessment; greater focus on planning for language and interaction; more small-group work, story time, music and singing' (Jopling et al., 2013, p. 80). Researchers' participant observation in these settings also documented changes in the learning environment. These revealed an increased focus on enriching children's language learning

opportunities. For example, changes included: 'introducing visual timetables for children; increased use of signing [for deaf children]; use of pictorials and poster prompts to support language; displays placed at the child level; improved labelling of resources (some using photos) and access to resources; display boards used to celebrate language and initiate child discussion; reallocating indoor space to offer small group areas, better book and cosy talk areas; extending the classroom into outside areas' (Jopling et al., 2013, pp. 80-81).

Qualitative interviews (Richter, 2012, p.199) showed that teachers through an intervention program of 4 days that stimulates teacher's own explorative learning successfully developed individual ways to integrate sciences into their work with children. Time and age of the children however was a restricting factor.

Blenkin and Hutchin's (1998) action research study found that the impact of CPD on the on-going process of practice improvement was clearly visible in practitioners' case studies and action plans. The authors stated: it 'is clear from the case study evidence that a significant number [of participants] have shown a deepening understanding of the impact of their provision on children's learning. The actual child observations themselves and the commitment to reflect and analyse them became the key to change' (Blenkin and Hutchin, 1998, p. 67). In McMillan's et al. (2012) study, the professional development training 'seemed to have the greatest impact on the quality of the teaching strategies of the practitioners' (McMillan et al., 2012, p. 405) which could be seen in a 'more integrated pedagogical approach … a better balance between play and work-based activities … greater child agency and collaboration were allowed for, and practitioners tuned in more appropriately to the learning experience' (McMillan et al., 2012, pp. 405-6). Johansson (2007, p. 162) reported that research and developmental work made pedagogical practice more exciting, stimulating, and varied which promoted a sense of reward from and pleasure in the work. Interventions based on practice-based research can be regarded as contributing to developing, changing and improving the general work in the ECEC sector and it increased the professional development among the staff.

Systematic use of documentation reports named Weekly Reports and Process reports that arose from CPD enhanced teachers' practices in relation to the coherent development, implementation and evaluation of the curriculum (Picchio et al., 2012). A study participant stated: 'I became aware of the shortcomings. When I analyse the Process Report I can see whether the effects of the educational practice are consistent with the objectives' (Picchio et al., 2012, p.167). Methodological and reflective competence developed through the training process allowed practitioners to identify critical issues in the educational context in which they were operating and to address them effectively through long-term planning. Sheridan et al. (2013, p. 145) reported that documentation can empower teachers to critically analyse their work in relation to the objectives of the curriculum.

Leal's (2011) study evaluated the impact of an accredited educational programme on the assessment of competences in Portuguese preschools. The main effect was on learning assessment practices at a micro level (decisions made in the activities room) and, to a lesser

extent, at a meso level (decisions made within the institution). Early childhood educators integrated pedagogical practices into a number of assessment strategies implemented during the educational programme, creating an awareness of the importance of centring assessment on descriptive procedures, focusing on (i) the child's activity and on the documentation and recording of work carried out on a day-to-day basis, and (ii) the development of competences of each child.

Rönnerman's action-research studies (2003, 2008) found that subsequent to the intervention there was a deliberate shift towards trying to find out what the children knew before planning an activity. Daily work was no longer only pre-planned but more open to listening to children's needs and ideas that arose during the day. Teachers both asked the children, and used the information to plan new themes, giving children an active role in the planning of, for example, thematic work. One teacher reflected on the change to practice: 'You have been more sensitive about the children's interests. Take their competence as a departure and spin on to it. You do not stop and stay within your frames anymore; you go a step further and find out things you might not have planned. You don't have to stick with your plans, if the child comes up with questions you find out the answers together with him/her' (Rönnerman, 2003, p.15).

Teachers in Asplund Carlsson et al's (2008) study reported the effects of a two-year action-research CPD project on children's aesthetic learning in Swedish pre-schools. They said it changed their way of talking about aesthetics. Teachers were involved in lectures, creative workshops and collective dialogue about their perceptions. As a result, they became more aware of the "object of learning" – what they were supposed to teach children, that it was not only about having fun and enjoyment but also about children's learning. They reported developing a deepened understanding of children's learning processes and, as consequence, they had become more actively involved with children and could ask questions that would direct the child's attention and help the children's discoveries in music, dance and poetry, for example. Teachers' understandings of their own role changed from 'doing' to 'learning and understanding' (Asplund Carlsson et al., 2008, p. 45-50).

Aubrey et al. (2012, p. 345) reported that the 'Let's Think' three-year intervention had, according to the view of the teachers, a whole-school impact. All the schools mentioned changes in teachers' practices and the thinking skills philosophy was used in other lessons and in situations in three of the four schools participating into the project.

A further aspect of the curriculum that changed as a result of CPD was reported by Peixoto (2007). The impact of a CPD programme focused on physical sciences and laboratory activities in Portuguese pre-schools was that teachers changed both their educational approach and didactic practices after being involved in training. In particular, initial data collection showed that pre-school teachers were convinced of the educational potential of laboratory activities but they were mostly implemented in a way that did not acknowledge children's previous ideas. By the training application phase, the teacher supervisor (researcher), led the participants to implement diverse types of laboratory activities organized in such a way as to foster children's

conceptual and procedural knowledge development. The overall evaluation of the programme showed that: i) teachers overcame most of their initial conceptual and methodological difficulties; ii) the facilitator role of the teacher educator (supervisor) was a crucial factor for the change of teachers' practices; iii) participants' conceptions about laboratory activities and their use in science teaching developed in such a way that they got closer to the epistemological conceptions adopted by the specialists in this area.

Share et al. (2011)'s evaluation of changes to early years practices that were the direct result of practitioners' exposure to the values and strategies in the 'Pen Green training' shows that they were wide ranging. They included changes to daily routines, such as settling in periods for new children, and changes to observation and assessment, such as undertaking regular child observations and introducing portfolios documenting children's learning experiences (Share et al., 2011, p. 8). However, the impact of CPD was uneven across the settings studied, and was dependent on the conditions under which such centres were operating. For example, whether non-contact time was granted to practitioners, whether all or just a few of the staff had taken part in the training, and whether the funding for centres was secure. This is another example of the inter-relationship of working conditions and CPD.

Similarly, SQW (2012) found that in response to CPD, practitioners had made major changes to create a more effective learning environment: such as 'different activity spaces/areas around the classroom (including a new relaxation room in one setting), new equipment, pictures of activities and signs on the walls and neutral space for free play' (SQW, 2012, p. 80). A further impact was greater time allocated to free-play. Peeters (1993) also found that as a result of quality improvement programmes carried out in the Flemish Region of Belgium there were changes to the educational environment provided by municipal childcare settings. The effects of CPD were improved furnishing and included, for example: 'mirrors on the walls, cushions on the floor, crawl-through corners and cosy soft toy corners' (Peeters, 1993, p. 56). Play equipment was made more accessible as result of staff's increased awareness of the importance of granting children freedom of movement and autonomous choices (Peeters, 1993, p. 59).

Finally, action-research CPD in a Croatian pre-school (Vujičić, 2008) highlighted that changing the arrangement of the room and equipment, as part of the intervention, had had a positive effect on the everyday experiences of children, who progressively gained ownership of the settings. One participant reflected that: 'We do not listen to so much crying anymore and there is no much sneaking either. Everyone finds their own games. However, they do not use boxes just as boxes, but they become a big train, a dust or floor cloth or a baby pram; they invent a hundred other things out of one. Seeing their satisfaction, joy and the way they influence each other and also us, we cannot feel anything else but satisfaction as well' (Vujičić, 2008, np).

To conclude, the chief benefit associated with the impact of action-based CPD on the educational practices enacted within ECEC settings is practitioners' encouragement to undertake pedagogical experimentation in order to find new ways of dealing with the complexity of everyday interaction between adults and children.

Collaborative practices

As might be expected from CPD that was usually workplace based and focused on practitioner learning in dialogue with colleagues, a clear area of impact was on collegiality, team work, working with parents and inter-professional collaboration.

Taking changes to practice reported within settings first, the impact of CPD on practitioners' team work through sustained workplace based dialogue was reported by 13 studies (Bleach, 2013; McMillan et al., 2012; Picchio et al., 2012; Rönnerman 2003 and 2008; Share et al., 2011; SQW, 2012; Vujičić, 2008; Van Keulen 2010; Hayes, et al., 2013; Wood and Bennett, 2000; Craveira, 2007). In Bleach's (2013) study, practitioners both 'appreciated the openness and willingness of others to share' and gained from 'the opportunity to express their opinions and to discuss issues that concerned them' (Bleach, 2013, p. 375). The process of sharing ideas and viewpoints helped them also to voice matters that they considered needed to be reviewed or changed. Bleach noted that action plans devised within the CPD led to changes in the structure of the setting, allowing for more time for staff reflection and planning, and for including practitioners' ideas in team meetings, so enhancing opportunities for team work. Hayes et al., (2013) reported that communities of practice meetings were identified by Early Years practitioners as a method of support that informed their practice, helped them to reflect, and gave them a sense of how implementation of the training manual was progressing in other services.

Rönnerman (2003) also noted that keeping work teams together during CPD training had 'strengthened them as a group', and gave them a common 'language to explain things'. Work teams, an important concept in the organisation of Swedish preschools, gained the confidence to both 'give away our best ideas instead of keeping them to ourselves' (as one pedagogue said) and to voice their opinions in staff meetings more readily (Rönnerman, 2003, p. 17). One particular method of strengthening team work considered valuable by Van Keulen (2010) was paired work with a colleague as 'critical friends' which enabled each pair to reflect, carry out assignments and give each other feedback on the learning process. Van Keulen (2010) reported that the technique of asking critical questions deployed during the action research CPD encouraged practitioners, the team and the organisation as a whole to phrase questions about practice. Examples were 'what do I think', 'why do I act the way I do', 'who benefits', 'how does the team deal with parents that do not live up to our ideals', and 'with which parents has the organization had insufficient or no contact over the past period, and how come?' Such a questioning attitude was considered productive at both a personal and at a team level (Van Keulen, 2010, p. 109). This study concluded that in the Netherlands, providing sufficient attention to developing the work team as a team was a key condition for creating sustainable change within ECEC services.

Craveiro (2007, p. 343) reported post intervention changes in the team 'climate', becoming more open to share views, collaboration and peer support: more team work between teachers and auxiliary staff, and changes in team work between teachers. This led to a more open and

inclusive ethos, eager to improve quality, less defensive, pro-active in problem solving and in formulating challenges. Teachers started to write plans based on child observations (critical incidents) and to collect evidence of children's learning and reported this to parents.

Creating opportunities for team work does not necessarily mean they are successful. McMillan et al. (2012) found that some practitioners were frustrated that staff discussions 'do not necessarily lead to change' in 'mindsets and routines' (McMillan et al., 2012, p. 407). Difficulties sustaining changes in team work was especially the case where not all the practitioners had participated in the CPD (Picchio et al., 2012). Inadequate non-contact time for staff to plan together as a team was noted as a barrier to sustaining practice change introduced through CPD (SQW, 2012).

Reviewed studies reported that CPD had had a positive impact on working with parents (Share et al., 2011; SQW, 2012; Vujičić, 2008; Rönnerman, 2003;Van Keulen, 2010; Peeters, 1993; Hayes et al., 2013). Share et al. (2011) found that Irish practitioners' participation in CPD had led to more, and more confident, dialogue with parents, a more welcoming approach and 'generally fostering a spirit of openness with parents', although at the point of evaluation not all the centres where staff had participated in the intervention ('the Pen Green training') operated formal parent-worker communication through a keyworker system. Staff training had helped parents to feel trust in the practitioners which gave them confidence to 'ask questions about their child's learning' (Share et al., 2011, p. 89). Dialogue with trained practitioners gave the parents confidence in, and reinforced, their own parenting practices and gave them new knowledge about how to name what the children were doing, and that made their children's learning more visible (Share et al., 2011, p. 89). Rönnerman (2003) and Van Keulen (2010) both reported that increased practitioner confidence in working with parents led to greater respect for staff shown by parents. Vujičić (2008) found a higher level of parental engagement as a result of action research CPD, particularly in practical support, such as 'bringing the material, sawing the cupboard and painting the walls' (Vujičić, 2008, np). Similarly, Peeters (1993) highlighted that at the conclusion of the quality improvement project there was a noticeable increase in parental participation in childcare centres. Get-together events started to take place regularly and parent evenings began to be organised around a set theme (Peeters, 1993, p. 64). Hayes et al., (2013, p. 3) also reported an increase in parental participation. Intervention services tended to have fewer instances of very low child attendance when compared to control services, which provided support for the overall CDI programme model in promoting attendance (Hayes et al., 2013, p. 4).

However, a study in Portugal (Leal, 2011) of an action research programme found that there was no impact on practitioners' conceptualisation of parents; they remained passive subjects.

Finally, in this section, CPD had an impact on collaborative practices and networking with external professionals (Ang, 2012; Bleach, 2013; SQW, 2012). Ang's (2012) evaluation of a leadership programme in children's centres found that the training had led to more effective partnership working with people from different professional backgrounds. This had partly come

about through establishing a centre's vision and strategy and a realisation that 'we needed to be much more integrated both with other professionals and with the wider community in our area' (Ang, 2012, p. 295). Multi-disciplinary training was also significant in creating integrated practice at local levels. Ang (2012) concluded that 'having a person to lead and drive the vision of the children's centre and having a clear focus on multi-agency work were … considered essential by 12 of the 15 participants interviewed'. Where action research training brought together practitioners from a number of settings, networking and dialogue across settings helped dissemination of good practices and provided reflective opportunities through peer exchange (Bleach, 2013).

Hayes et al. (2013) found that practitioners had a need for clear roles and responsibilities among the team involved in the intervention and they also identified the value of having an accessible mentor for all components of the training manual, to enable focused practice.

In summary, the impact of CPD on ECEC practice as reported by practitioners in reviewed studies centres on:

- active participation in a learning cycle characterised by learning skills of reflective thinking, action and goal setting;
- through active participation the generation of practitioner self-confidence both individually and as a team;
- reconceptualisation of the role of practitioners as educators and of children as active learners;
- more effective use, and a greater range, of pedagogical tools for documentation, including journals, video and professional guidance;
- encouragement to undertake pedagogical experimentation;
- more effective collaborative practices within teams, with parents and with external professionals.

Effects of CPD initiatives on staff-child interactions

The impact of CPD on staff-child interactions is a particular aspect concern of this study. In order to give due prominence to this area of interest, we have presented the findings on staff-child interactions separately from other effects of CPD, although recognising that there is an overlap.

Five studies show that CPD has an impact on staff-child interaction (Blenkin and Hutchin, 1998; Jopling et al., 2013; Potter and Hodgson, 2007; Sheridan et al., 2013; SQW, 2012). These studies stated that changes in staff-child interaction occur when ECEC practitioners are provided with both the time and the opportunity to reflect on their practice.

For example, Potter and Hodgson (2007) described the benefits of the 'Adult Child Interaction (ACI) Course', a reflective training approach designed to enhance interactions between adults and children. One of the key benefits of the ACI training process was that practitioners began to engage in a process of critically reflecting on their practice. This appeared to be greatly facilitated by the use of video clips and work-based support visits. The viewing of practice video clips during training sessions acted as a vital catalyst in prompting staff to question key aspects of their interactions with children. As a result of viewing a video clip of their own practice, practitioners began to challenge their habitual ways of thinking and acting.

Furthermore, analysis of pre- and post- ACI training videotapes demonstrated that staff had modified key aspects of their language behaviour. After the training, practitioners began fewer interactions with the individual children than before, thereby providing greater opportunity for children to initiate more conversational turns. For example, they asked fewer questions which allowed children to take a greater lead in conversations.

These changes in adult language behaviour, however, seemed to be grounded in more fundamental shifts in how staff conceptualized their whole approach to working with children. As reported above (s. 4.2.1) practitioners' focus on enabling children to take a greater lead in individual interactions quickly led to a wider examination of their role within the nursery and a reappraisal of how to support children to take a greater lead in a number of areas.

A High/Scope Programme in Ireland (SQW, 2012) found that how practitioners view children had a profound influence on their interactions with the children. Sheridan et al. (2013) reported that there was a change of focus from the individual child to teachers themselves and to the relationships between them. The teachers stopped evaluating individual children. Instead, they assessed the relationship between their own work and expressions of interaction and communication both among children, and between them and the children (Sheridan et al., 2013, p. 142). The intervention created ways for children to make their voices heard and to participate in the documentation processes, but also elevated the status of the child as co-constructor in his or her own learning process.

Jopling et al. (2013) described the implementation of 'Early Talk (ET)', a programme designed to improve speech, language and communication (SLC) outcomes for children aged 0-5. Participant practitioners believed that the programme enhanced their confidence and brought positive changes to their practice such as staff communicative behaviour and practice, and improved interactions between practitioners and children.

Stimulating caregiver-child interactions was a key goal of a five year intervention programme in six ECEC institutions (Peeters, 1993). Different types of CPD were undertaken to make practitioners more sensitive to the needs of children, leading to spectacular improvements in two groups of day and night childcare centres. The author observed that 'in both these groups there is an obviously individual approach to the children. The children are closely involved in events. The childcare worker actively involves herself in the game playing of the children'

(Peeters, 1993, p. 61). Improvements in staff-child interactions were possible, over time, and with multiple investments at different levels, plus a spirit of 'willingness' among practitioners.

Besides the use of videotapes as an observational tool for the evaluation of the actions of practitioners (Potter and Hodgson, 2007), videotapes are also often used to make child observations (Blenkin and Hutchin, 1998; Sheridan et al., 2013). Blenkin and Hutchin (1998) stated that observing video helps practitioners to deepen their understanding of their own professional practice, especially with regard to the role of the adult in children's activities and child-adult interaction. In the 'Principles Into Practice (PIP) project', child observations were used as a method of evidence gathering in action research. This led to numerous changes regarding the interaction between children and adults. First, the process of analyzing the observations changed perceptions of the children and their actions. This helped practitioners to assess the impact of their work with the children. Furthermore, the various discussions and the process of the analysis itself, helped practitioners to gain confidence in their professional knowledge and understanding. Altogether, this influenced the interactions with the children. 'Changes to practice initially occurred through planning new activities for the children, but later Kathy [a practitioner-participant] felt this approach had been simplistic and what she had needed to do was change practice in more complex ways; to think about the way the staff interacted with the children during and about their activities, rather than to alter physical provision and resources alone' (Blenkin and Hutchin, 1998, p. 67).

Child observations clearly have a strong impact on developing reflective practice. Interestingly, where observations were used to assess the outcomes (development) of the children, the observations made during the PIP project (Blenkin and Hutchin, 1998) were used as a tool to evaluate the quality of the work itself. By observing children and discussing the observations with colleagues, practitioners were able to arrive at ideas to change their practices and their role in interaction with children.

This shift in focus of observation is also articulated in Sheridan's et al. (2013) study on Systematic Quality Work in Swedish preschools. As noted above (s.4.2.1), there was a change of focus from the individual child to the teachers themselves and the relationship and interactions between the teachers and the children. The teachers stopped evaluating individual children. Sheridan et al. (2013) highlight pedagogical documentation as an important method of gaining knowledge not only of children's learning processes, but also of the teacher's interaction with the children and the process of preschool quality. According to Sheridan et al., documentation can also be used as a tool for teachers to identify their own competence and to guide them in their work. It helps them to see that they are doing the right things with children, which in turn makes them feel confident in themselves. It gives them insight into where their work leads and why.

The findings of the studies mentioned in this section demonstrate that practitioners can and do engage in high level critical reflection when they are provided with both the time and the opportunity to do so, and when effective training strategies are employed. Such reflection,

which in most cases involves some sort of observation, has the potential to deliver important improvements in the interaction between practitioners and children.

Effects of CPD initiatives on children's learning and socialising experiences

The impact of continuing professional development on the cognitive and non-cognitive outcomes for children is a major concern of this review. However, this is the area with least international evidence.

SQW (2012) evaluated the results of the support of the '3 4 5 learning service'. They observed that children's ability to make choices improved, they were expressing their ideas more openly, and their ability to solve problems increased. The children acted more independently by serving themselves food and drink and put on their clothes, they were more engaged in learning had more communication with each other and with practitioners. Vujičić (2008) reported that after several episodes of training in continuous research on educational practice, practitioners changed the environment and overcame their anxiety, leading to the children crying less frequently, fighting less, and separating from their parents with fewer problems.

Aubrey et al. (2012, p. 345) reported that all school staff where the intervention took place thought the 'Let's Think' programme enhanced their pupils thinking skills. They engaged in more critical thinking and children thinking more for themselves. The teachers also noted improved use of language, more attentive listening, increased social cooperation and children having more confidence and independence. All schools mentioned a noticeable impact on children with English as an additional language and /or special educational needs.

Narrative synthesis of views studies on working conditions

Reported effects of working conditions on pedagogical practice

Only one study reported findings on the effects of working conditions on pedagogical practices from the point of view of practitioners and this took place in Spain. Sandstrom (2012) found that the burden of dealing with too much school administration had an adverse impact on teachers' pedagogical practice. Escalating administrative tasks coupled with changes to the school day to cut rest periods meant that teachers had little opportunity to meet, plan, reflect on activities or engage in training.

Reported effects of working conditions on staff-child interactions

Observed effects

Two studies are describing the effect of large classes on staff-child interactions (Blatchford, 2002; Sandstrom, 2012). Blatchford (2002) reported on one class with 35 children in a rural area of England (Shropshire). He concluded that the teacher, despite her level of experience and competence, was working under stress. She was able to do effective teaching, but at great personal and emotional expense. She interacted with about 17 children every minute and she often repeated instructions. The teacher-child interactions were concerned with management activities and quelling rising noise levels. She was not able to talk to every child each day and she said that the children received less individual attention then they would in a smaller class. Instead, in small class rooms of 15 children or fewer, there was more interaction between teacher and children and more responsiveness of the teacher to the children's interests. In smaller class rooms, teaching can be more flexible and activities are more open ended. The children also showed high levels of persistence.

Effects reported by practitioners

The teachers taking part to the study conducted by Blatchford et al. (2002), when comparing large and small classes, reported that in large class rooms, basic skills learning, such as letter formation, suffered, especially in reception class (for children aged four years old). Teachers working in small classes reported that they had more time for monitoring, checking and understanding children's learning: they could more effectively encourage children to work independently and they could get to know the children better as individuals.

Sandstrom (2012) explored the views of teachers from Andalusia (Spain) who had to adapt their teaching after an over-enrolment of children in their class (more than 25 for one teacher). This was due to the fact that preschool became universal in Spain and early enrolment of younger children into preschools was introduced. For example it was reported that teachers more often rely on lesson books with worksheet activities - in conjunction with centre-based activities - as a way of maintaining control on large groups of children. In addition, large classes were seen as particularly problematic because of the young age of the children (as young as 2,5 at the start of the school year, sometimes they were not yet toilet trained), as the teacher had to accomplish both educational and care tasks. Some teachers described experiencing burn-out and even

symptoms of depression. Teachers considered that 18 children per teacher was a good ratio. In this study teachers also complained about a lack of adequate facilities, such as playgrounds and bathrooms placed outside the playroom, and appropriate toys and materials.

Only one study reported practitioner's views on the impact of working conditions on children's learning and socialising experiences. Blatchford et al. (2001) reported that overall, in smaller classes children seemed to experience interactions that were more productive for learning and more socially intense. In larger classes, an individual child was more likely to experience a less intense contact with teachers and social contacts, and more contacts in whole-class contexts about procedural matters.

Conclusions and implications

This review has analysed the existing research on the relationships between continuing professional development, working conditions, interactions between staff and children, and outcomes for children. The results have shed some light on the impact that in-service training opportunities and working conditions have on the quality of ECEC services, on the interactions between staff and on the outcomes for children. This chapter reviews the main findings of impact and views studies in relation to the effectiveness of CPD and working conditions. By combining the main findings of impact studies – that examined which intervention were effective – with the main findings of 'views studies' – that explored perspectives and experiences of participants – the cross-study synthesis contributes to achieve a deeper understanding of how interventions linked to staff CPD and WC can be made to work more effectively. Recalling the issues raised in the background section with regard to systematic review approaches to complex interventions, the conclusions presented below addresses two questions:

- what do we know about the kind of CPD interventions or working conditions that are effective?
- what do we know in regards to 'why', 'for whom' and 'under which circumstances' such interventions are effective?

The state of European research evidence on CPD and WC

Specialist researchers involved in this review were surprised by the quantity of studies that were published on working conditions and continuing professional development throughout Europe. Whereas evaluation studies examining the impact of WC and CPD interventions on children's outcomes and staff-child interaction might be more common in large English-speaking countries outside EU (such as the United States and Australia), European literature has a tendency to investigate the effects of CPD and WC within a broader pedagogical perspective. Such perspectives focus on the effects of CPD and WC on ECEC quality and its associated features, among which practitioners' competences (knowledge, practices and understandings).

However, while a rich body of scholarly research and grey literature exists in relation to theoretical conceptualisation of CPD approaches and in relation to the description of locally developed practices, empirical studies aimed to systematically evaluate the effectiveness of CPD interventions are extremely rare in European Member States. Nevertheless, the total amount of articles screened at full text was quite high (n= 454, including 173 documents in original, non-English language). 39 English and 27 non English studies were selected for the mapping exercise and after the quality appraisal 44 studies in total remained for the in-depth review.

Of the 66 studies included in the map, studies from countries as the UK (9), Portugal (9), Ireland (8), Sweden (8), Germany (7) and Spain (6) are well represented. Countries with a good reputation in international reports about ECEC – like Denmark and Finland - have a limited number of studies on the topic (1 and 2 respectively). We also note that in the new EU member

states (who are member since 2004/2006) the number of studies is rather limited (5 in total). In most countries represented in the review, research on services for the youngest children tended to be rather underrepresented, whereas research on family day-care related to such topics was virtually nonexistent.

From the analysis of available evidence it seem plausible that in some countries (like the English speaking countries, the Netherlands and Germany) 'hard' scientific evidence for investing in ECEC might be more important than in others (Denmark, Finland, Italy, Belgium, Slovenia, Croatia), with a long tradition in investing in ECEC. It is striking that there are no included studies from France, a country with a long tradition in studies on how professionalism in ECEC can be increased. The French studies were not focused on quality or children's outcomes and were therefore not included. We see the same focus, on how CPD and working conditions can be organized in the Italian studies, and the same trend not to examine this in terms of quality or children's outcomes.

Overall – out of total number of studies included in mapping – 76% focus on continuing professional development, 21% focus on working conditions while 3% are investigating issues related to both WC and CPD. All the studies included in mapping have been carried out in EU Member States except for two comparative studies reporting findings on structural quality components that are related to working conditions.

If we look at the kind of studies we can conclude that most studies (n=41) report qualitative data derived from qualitative and mixed-methods research studies. 35 studies report quantitative findings derived from quantitative and mixed-methods research studies.

Concerning the quantitative studies, it is noteworthy that more than half of the studies included in mapping were carried out according to research designs that did not necessarily evaluate impact. The rest of the studies adopted a Before and After research design, using measures at baseline and a period after the intervention and only two European studies reported using a Randomised Control Trial design; one in Denmark and one in Ireland. This suggests that there is paucity of reliable (hard) evidence about the effects of CPD and working conditions on ECEC quality, staff-child interactions and children's outcomes.

The quantitative studies were predominantly evaluating CPD interventions only (n=20), 14 studies focused on WC only and only one focused simultaneously on CPD and WC and this study had an RCT-design. However, most impact studies on WC conditions were excluded due to the fact that their research design did not meet quality criteria. Therefore it was not possible to give clear results on the impact of working conditions on ECEC quality and children's outcomes.

With regard to the 41 qualitative studies, we see that the majority of the studies adopted either a participatory evaluation design (19; 46%) or an action-research design (16; 39%). Interestingly, more than half of the views studies adopting an evaluation design were carried out in the UK and Ireland (11 out of 19) while action-research designs were more commonly found in studies carried out in Sweden and Continental Europe.

The views studies focused overwhelmingly on CPD interventions only (n=37). It is remarkable that more than one third of the views studies on CPD (36%) included in mapping described or evaluated the effects of long-term professional development initiatives. This is surprisingly more than the quantitative studies, of which only 24% of the studies evaluated the effects of long-term professional development initiatives.

Only four out of the 41 view studies explored practitioners' perceptions in relation to staff working conditions. Interestingly three out of four were mixed-methods studies, which might indicate that the issues related to staff working conditions in ECEC settings are under-investigated in qualitative research.

For this review, the state of the European research evidence had clear implications for the number of studies we included in the in-depth review. By applying a strict quality appraisal, we found out that the amount of reliable evidence on the effects of working conditions on ECEC quality, staff-child interactions and children's outcomes was very scarce. Therefore we considered it not possible to synthesise findings of impact and views studies on this topic.

What kind of CPD interventions are found to be effective?

In general we can conclude that interventions that are integrated into the ECEC centre's practice with a feedback component are effective. For short time trainings, intensive intervention with a video-feedback component have been found to be effective in fostering practitioners' competences in care giving and language stimulation, and regarding children outcomes there were significant gains in terms of language acquisition and cognitive development.

Long-term CPD interventions integrated into practice, such as pedagogical guidance and coaching in reflection group have been proven to be effective in very different contexts: in countries with a well-established system of ECEC provisions and a high level of qualification requirements for the practitioners, but also in countries with scarcely subsidized ECEC systems and low qualification requirements. So independent from the kind of ECEC system long-term pedagogical support to staff provided by specialized coaches or pedagogical counsellors in reflection groups was found to be effective in enhancing the quality of ECEC services and to sustain it over a long period of time. Evidence of impact on children's cognitive and social outcomes have also been found.

Why, for whom and under which circumstances is CPD effective?

From the qualitative studies we learn that CPD interventions have positive effects on practitioners' knowledge, practice and understandings. The findings of the reviewed studies show that taking part in CPD activities increases practitioners' pedagogical awareness, professional understandings and deepen reflectivity, enabling them to strengthen their capacities and address areas for improvement in their everyday work in ECEC settings.

Several studies found that by taking part in participative CPD, practitioners reconceptualised their role as educator: they began to see children as protagonists of their own learning.

Engaging in CPD interventions in highly socio-culturally diverse ECEC contexts can lead practitioners to reconceptualise the role of parental involvement. They are more interested in the way parents educate their children at home and in questioning how the ECEC centres could take some of the practices of the children.

The elaboration of more responsive educational strategies for enhancing children's learning were highlighted as one of the main effects of CPD on practitioners. CPD enhances also teachers' practice in relation to the coherent development, implementation and evaluation of the curriculum or pedagogical framework.

CPD that is workplace based has a clear impact on collegiality, team work and inter-professional collaboration, it strengthens the team as a group. In particular, it was found that video-supervision might be an effective strategy for the delivery of training programmes. In fact practitioners reported that viewing video recordings of their own pedagogical practice acted as a vital catalyst in prompting them to question key aspects of their interactions with children and to enhance the quality of their pedagogical practice. CPD interventions as reported by the practitioners had also effects on children, it increased their ability to solve problems and to make choices, and they were expressing their ideas more openly. The teachers also noted improved use of language, more attentive listening, increased social cooperation and more self-confidence and independency.

Conditions for effectiveness

The reviewed evidence gives an indication of what might be critical success factors determining the effects of CPD provisions on the practitioners. First, the CPD intervention has to be embedded in a coherent pedagogical framework or curriculum that builds upon research and addresses local needs. Secondly, there has to be an active involvement of practitioners in the transformative process for the improvement of educational practices within ECEC settings. And thirdly, CPD needs to be focused on practitioners learning in practice, in dialogue with colleagues and parents and therefore a mentor or coach has to be available during ECEC staff non-contact hours.

The findings of the qualitative studies show which kind of interventions are integrating those three critical factors. An engagement in research-based enquiry or action-research can be an effective way to critically explore the link between theory and practice in their every day work and in order to improve their pedagogical practice. The cycle of planning, acting, observing and reflecting that is used in interventions around documentation or in action research, can provide the structure to implement quality frameworks or curriculums and to focus more on children's needs rather than on pre-determined choices made by the practitioners. Furthermore practice-based research can contribute to raising the quality of ECEC services through the dissemination and exchange of good practice, which in turn might contribute to increase the status of the ECEC towards the public and policy makers.

Concerning the desirable duration of the intervention, evidence show that intensive CPD programmes with a video feedback component might be more effective for the achievement of short-terms outcomes .Long-term CPD initiatives accompanied by pedagogical guidance and coaching in reflection groups might be more effective for enhancing and sustaining the quality of ECEC services over long periods of time. In this sense different combinations of CPD delivery modes do not have to be seen in opposition but rather as complementary, serving different goals in different contexts.

What kind of working conditions are found to be effective?

Only five studies rated as reliable found that, broadly speaking, staff:child ratio and class-size have positive effects on the quality of practitioners' practices and on staff-child interaction . However, there are considerable difficulties in generalising such findings across settings given to the effects of the type of settings and the range of study design, observations and tests adopted for the studies.

In regards to the type of settings, two Swedish studies were reporting the effects of working conditions in a context of well-established ECEC systems of early education and care operating under high standard conditions (such as training of teachers and childcare workers). The English study reports about early education settings that are provided within the compulsory school system. The Spanish study reported on the effects of structural quality conditions coming into force after a national reform was enacted, whereas in the Irish study the type of provision studied (early intervention programme) was established within a Government-funded project which lasted for only two years.

In regards to the second aspect, the studies adopted different measurements of staff:child ratio and class-size as well as different tools in order to evaluate their effects on practitioners' practice or their impact on staff-child interactions and children's outcomes. There must, therefore, be concerns about comparability of outcome measures across countries.

Strengths and limitations of this systematic review

Strengths

This study is the first systematic review on CPD and WC with a focus and scope on all member states countries of the European Union. Former systematic reviews included mainly studies from Anglo-Saxon countries outside Europe, where the context of ECEC is quite different. This systematic review is also the first that is covering studies that are published in languages other than English. The researchers discovered impact studies on CPD with a high quality appraisal that were not published in English scientific journals (e.g. the German impact studies).

Methodological difficulties in conducting the review

The research team experienced some difficulties in establishing inclusion criteria that would be as comprehensive as possible to cover the diversity of research traditions inside Europe. In the different languages that are spoken inside the EU, the concepts that are used in CPD and WC are

very different. To cover all the concepts used in the EU countries the researchers had to work with a high number of key terms which explains why there were so many records found at first stage (19,452). This had unexpected consequences for the research team that had to screen manually 13,670 abstracts after 5,782 were excluded due to low priority screening.

The team also encountered severe problems during the data extraction phase due to the heterogeneity of research designs and also due to the different types of interventions that were studied. These interventions were often embedded in wider ECEC systems and pedagogical assumptions which were frequently given for granted and not reported in the articles or reports.

The Quality Appraisal stage also presented some challenges as most impact studies on WC conditions were excluded due to the fact that their research design did not comply with inclusion criteria established by the EPPI centre for evaluating robustness of evidence (most of the impact studies included in the mapping were not RCT or Before and After studies). Therefore it was not possible to give any conclusive results on the impact of working conditions on quality and children's outcomes.

A last difficulty was encountered at the synthesis stage: due to the heterogeneity of research designs adopted by the studies and to the heterogeneity of interventions investigated it was not possible to directly compare findings but only to analyse them narratively.

Involvement of national experts

More and more governments and international organizations are requiring a systematic review to support their policy. When doing this systematic review, we were facing several problems, due to the many different languages in Europe and to the different European research traditions.

In most continental European member states there are no data bases for research on ECEC. This makes it very difficult and time consuming to do a systematic review as country representatives had to carry out searches manually through combination of key-terms in institutional web-sites and relevant journals. The role of the country representative is therefore very important, which can cause serious problems with regard to the reliability of the systematic review. We have seen great differences in the amount of studies that were presented for screening by country representatives. Therefore we recommend that research organizations in the member states should set up data bases where all ECEC research in the language of the country should be gathered, with abstract in the major European languages.

Another problem is the many different languages of the studies. There is a considerable potential to extend systematic reviews into European countries. For non-English studies the research team need to be as multilingual as possible, but it is of course not possible to have a team that can speak all European languages. For the languages that are unknown by the research team it is impossible to check if the procedure is followed in the right way. Therefore we recommend that research organizations in the member states invest in developing new ways of carrying out systematic reviews to overcome these challenges. Furthermore it would also be

advisable to invest in the training of researchers in exploring innovative ways of conducting systematic reviews across contexts that are characterised by different research traditions and epistemological approaches.

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Appendix 1: Search strategy

We hereby describe key search terms entered into electronic databases to identify relevant publications. They are organised into key concepts. Following this is a record of a search run on the Applied Social Science Index and Abstracts (ASSIA), using PROQUEST.

Concept one: population	**Concept two: Continuous Professional Development (CPD)**	**Concept three: Working conditions (WC)**	**Concept four: Early Childhood Education And Care Provision (ECEC)**
Child*	"Continuing education"	"Career mobility"	"Early childhood care and education"
Practitioner*	"Communities of practice"	"Career progress*"	"Early childhood cent*"
Professional*	"In service*"	"Class size"	"Early childhood education and care"
Staff	Inservice*	"Employment status"	"Early childhood education"
Worker*	"In-service*"	"Group size"	"Early childhood program*"
Workforce	"Peer learning"	"Non contact time"	"Early childhood provision*"
Teacher*	"Practice based research"	"Professional association"	"Early education"
Assistant*	"Professional education"	"Turn over"	"Early years provision"
"Family day carer"*	"Professional development"	"Trade union"	"Child care"
	"Professional learning"	"Work* condition"	"Child-care"
	"Professional learning communit*"	"Work* environment"	Childcare
	Accredit*	"Work* hours"	Creche*
	Conference*	"Work schedule"	Day-care

	Competence* Course* Development E-learning Knowledge Intergenerational “Inter generational” “Inter-generational” Learning Mentor* Network* Program* Seminar* Training Workshop*	Benefits Gender* Incentive* Inter-professional “Inter-professional” Interprofessional Leadership Manage* Planning Preparation Ratio Salar* Support* Team Wages Workload	“Day-care” Daycare Kindergarten Nursery Pre-primary Pre-school*

Combinations of search terms or their equivalent from the individual databases' thesauri were explored until all search terms were exhausted. The following are search strings and combinations used for searching the database Applied Social Science Index and Abstracts (ASSIA), using PROQUEST.

ASSIA

Concept one (C1): Population

((ti(child) OR ab(child) OR ti((practitioner OR professional)) OR ab((practitioner OR professional)) OR ti((staff OR worker)) OR ab((staff OR worker)) OR ti(workforce) OR ab(workforce)) OR (SU.EXACT("Children") OR SU.EXACT("Nursery nurses"))) OR SU.EXACT("Teachers") OR ti((Assistant* OR "family day carer*")) OR ab((Assistant* OR "family day carer*")) AND pd(>19911231)

Concept two (C2): CPD

((ti("communities of practice" OR "professional learning") OR ab("Communities of practice" OR "professional learning") OR ti((professional development OR "in service")) OR ab((professional development OR "in service")) OR ti((intergenerational OR coach*)) OR ab((intergenerational OR coach*)) OR ti((peer learning OR practice based research)) OR ab((practice based research OR peer learning)) OR ti((education OR conference)) OR ab((education OR conference))) OR ti((competence OR course)) OR ab((competence OR course)) OR ti((development OR e-learning)) OR ab((development OR e-learning)) OR ti((knowledge OR learning)) OR ab((knowledge OR learning)) OR ti((mentor* OR network*)) OR ab((mentor* OR network*)) OR ti((program* OR accredit*))) OR ab((program* OR accredit)) OR ti((seminar* OR training)) OR ab((seminar* OR training)) OR ti((workshop* OR "continuing education")) OR ab((workshop OR "continuing education")) OR ti("professional learning communit*") OR ab("professional learning communit*") OR SU.EXACT("Professional development") OR (SU.EXACT("Learning") OR SU.EXACT("Continuing education") OR SU.EXACT("Training")) AND pd(>19911231)

Concept three (C3): WC

(((ti("career progress*") OR ab("career progress*") OR ti((planning OR preparation)) OR ab((planning OR preparation)) OR ti(("non contact time" OR "employment status")) OR ab(("non contact time" OR "employment status")) OR ti((support OR gender*)) OR ab((support OR gender*)) OR ti(("group size" OR "class size")) OR ab(("group size" OR "class size"))) OR ti(("career mobility" OR inter-professional)) OR ab(("career mobility" OR inter-professional)) OR ti(("professional association" OR team)) OR ab(("professional association" OR team)) OR ti((turnover OR "trade union*")) OR ab((turnover OR "trade union*")) OR ti(("work* conditions" OR "work* hours")) OR ab(("work* conditions" OR "work* hours"))) OR ti(("work*environment" OR leadership)) OR ab(("work* environment" OR leadership)) OR ti((benefit* OR incentive*)) OR ab((benefit* OR incentive*)) OR ti((manage* OR ratio)) OR ab((manage* OR ratio)) OR ti((wage* OR salar*)) OR ab((wage* OR salar*)) OR ti(workload)) OR ab(workload) OR ti("work* schedule")

OR ab("work* schedule") OR (SU.EXACT.EXPLODE("Working conditions") OR SU.EXACT.EXPLODE("Employment status")) AND pd(>19911231)

Concept 4 (C4): ECEC provision

(ti("early childhood education") OR ab("early childhood education") OR ti(("early childhood program*" OR "early years provision")) OR ab(("early childhood program*" OR "early years provision")) OR ti(("pre-primary" OR "child care")) OR ab(("pre-primary" OR "child care")) OR ti(("childcare" OR "early childhood care and education")) OR ab(("childcare" OR "early childhood care and education")) OR ti(("early childhood education and care" OR "pre-school")) OR ab(("early childhood education and care" OR "pre-school"))) OR ti((Kindergarten OR kindergarden)) OR ab((Kindergarten OR kindergarden)) OR ti((creche* OR nursery)) OR ab((creche* OR nursery)) OR ti((daycare OR "early childhood centers")) OR ab((daycare OR "early childhood centers")) OR ti(("early education" OR "early childhood provision")) OR SU.EXACT("Early childhood education") OR SU.EXACT("Quality child care") AND pd(>19911231)

C1 AND C2 AND C3 AND C4 (Combined)

(((ti("communities of practice" OR “professional learning”) OR ab("Communities of practice" OR “professional learning”) OR ti((professional development OR "in service")) OR ab((professional development OR "in service")) OR ti((intergenerational OR coach*)) OR ab((intergenerational OR coach*)) OR ti((peer learning OR practice based research)) OR ab((practice based research OR peer learning)) OR ti((education OR conference)) OR ab((education OR conference))) OR ti((competence OR course)) OR ab((competence OR course)) OR ti((development OR e-learning)) OR ab((development OR e-learning)) OR ti((knowledge OR learning)) OR ab((knowledge OR learning)) OR ti((mentor* OR network*)) OR ab((mentor* OR network*)) OR ti((program* OR accredit*))) OR ab((program* OR accredit)) OR ti((seminar* OR training)) OR ab((seminar* OR training)) OR ti((workshop* OR "continuing education")) OR ab((workshop OR "continuing education")) OR ti("professional learning communit*") OR ab("professional learning communit*") OR SU.EXACT("Professional development") OR (SU.EXACT("Learning") OR SU.EXACT("Continuing education") OR SU.EXACT("Training")) AND pd(>19911231)) AND (((ti(child) OR ab(child) OR ti((practitioner OR professional)) OR ab((practitioner OR professional)) OR ti((staff OR worker)) OR ab((staff OR worker)) OR ti(workforce) OR ab(workforce)) OR (SU.EXACT("Children") OR SU.EXACT("Nursery nurses"))) OR SU.EXACT("Teachers") OR ti((Assistant* OR "family day carer*")) OR ab((Assistant* OR "family day carer*")) AND pd(>19911231)) AND ((ti("early childhood education") OR ab("early childhood education") OR ti(("early childhood program*" OR "early years provision")) OR ab(("early childhood program*" OR "early years provision")) OR ti(("pre-primary" OR "child care")) OR ab(("pre-primary" OR "child care")) OR ti(("childcare" OR "early childhood care and education")) OR ab(("childcare" OR "early childhood care and education")) OR ti(("early childhood education and care" OR "pre-school")) OR ab(("early childhood education and care" OR "pre-school"))) OR ti((Kindergarten OR kindergarden)) OR ab((Kindergarten OR kindergarden)) OR ti((creche* OR nursery)) OR ab((creche* OR nursery)) OR ti((daycare OR "early childhood centers")) OR

ab((daycare OR "early childhood centers")) OR ti(("early education" OR "early childhood provision")) OR SU.EXACT("Early childhood education") OR SU.EXACT("Quality child care") AND pd(>19911231)) AND ((((ti("career progress*") OR ab("career progress*") OR ti((planning OR preparation)) OR ab((planning OR preparation)) OR ti(("non contact time" OR "employment status")) OR ab(("non contact time" OR "employment status")) OR ti((support OR gender*)) OR ab((support OR gender*)) OR ti(("group size" OR "class size")) OR ab(("group size" OR "class size"))) OR ti(("career mobility" OR inter-professional)) OR ab(("career mobility" OR inter-professional)) OR ti(("professional association" OR team)) OR ab(("professional association" OR team)) OR ti((turnover OR "trade union*")) OR ab((turnover OR "trade union*")) OR ti(("work* conditions" OR "work* hours")) OR ab(("work* conditions" OR "work* hours"))) OR ti(("work*environment" OR leadership)) OR ab(("work* environment" OR leadership)) OR ti((benefit* OR incentive*)) OR ab((benefit* OR incentive*)) OR ti((manage* OR ratio)) OR ab((manage* OR ratio)) OR ti((wage* OR salar*)) OR ab((wage* OR salar*)) OR ti(workload)) OR ab(workload) OR ti("work* schedule") OR ab("work* schedule") OR (SU.EXACT.EXPLODE("Working conditions") OR SU.EXACT.EXPLODE("Employment status")) AND pd(>19911231))

Search Sources

Electronic sources:

- ASSIA (Applied Social Science Index and Abstracts)
- British Education Index
- Child data
- Educational Research Abstracts (ERA)
- Educational Resources information Centre (ERIC)
- International Bibliography of the Social Sciences (IBSS)
- Psycinfo
- SCOPUS
- SSCI/ web of knowledge [includes Web of Science]

International websites:

- OECD Library
- EC Commission Websites:
    - DG Education and Culture

    - DG Employment
    - DG Justice
- Eurydice database
- Social Policy Digest

National websites and databases: via country experts in all EU Member States

Journals

- Contemporary Issues in Early Childhood
- Early Childhood Research Quarterly
- Early Education and Development
- Early Years: An International Journal
- Early Child Development and Care
- European Early Childhood Education Research Journal
- European Journal of Education
- International Journal of Early Childhood
- International Journal of Early Years Education
- International Research in Early Childhood Education
- Journal of Early Childhood Research
- Journal of Early Childhood Teacher Education
- Scandinavian Journal of Education Research
- Children and Society

Appendix 2: Quality appraisal criteria: Views Studies

1. **Enhancing reliability of data collection methods** (*e.g. use of interview topic guides*)

    a. Yes, a (fairly) thorough attempt was made (*specify*)
    b. Yes, several steps were taken (*specify*)
    c. Yes, minimal few steps were taken (*specify*)
    d. No, not at all/ Not stated/ Can't tell (*specify*)

2. **Enhancing validity of data collection methods** (*e.g. pilot interviews*)
    a. Yes, a (fairly) thorough attempt was made (*specify*)
    b. Yes, several steps were taken (*specify*)
    c. Yes, minimal few steps were taken (*specify*)
    d. No, not at all/ Not stated/ Can't tell (*specify*)

3. **Enhancing reliability of data analysis methods** *(e.g. use of independent coders*)

    a. Yes, a (fairly) thorough attempt was made (*specify*)
    b. Yes, several steps were taken (*specify*)
    c. Yes, minimal few steps were taken (*specify*)
    d. No, not at all/ Not stated/ Can't tell (*specify*)

4. **Enhancing validity of data analysis methods** (*e.g. searching for negative cases*)

    a. Yes, a (fairly) thorough attempt was made (*specify*)
    b. Yes, several steps were taken (*specify*)
    c. Yes, minimal few steps were taken (*specify*)
    d. No, not at all/ Not stated/ Can't tell (*specify*)

5. **Is sufficient data presented to mediate between data and interpretation (*specify*)** (*e.g. Use of quotes; volume of quotes; do they support findings reported*)

6. **Study quality: Weight of Evidence:**

    1. **Were steps taken to increase rigour in the sampling?** (*Consider whether: the sampling strategy was appropriate to the questions posed in the study (e.g. was the strategy well reasoned and justified); attempts were made to obtain a diverse sample of the population in question (think about who might have been excluded who might have had a different perspective to offer); characteristics of the sample critical to the understanding of the study context and findings were presented (i.e. do we know who the participants were in terms of for example, basic socio-demographics, characteristics relevant to the context of the study?*)

a. Yes, a (fairly) thorough attempt was made (*specify*)
b. Yes, several steps were taken (*specify*)
c. Yes, minimal few steps were taken (*specify*)
d. No, not at all/ Not stated/ Can't tell (*specify*)

2. **Were steps taken to increase rigour in the data collected?** (*Consider whether: data collection was comprehensive, flexible and/or sensitive enough to provide a complete and/or vivid and rich description of people's perspectives and experiences (e.g. did the researchers spend sufficient time at the site/ with participants? did they keep 'following up'? Was more than one method of data collection used?); Steps were taken to ensure that all participants were able and willing to contribute (e.g. processes for consent, language barriers, power relations between researchers and participants).*)

a. Yes, a (fairly) thorough attempt was made (*specify*)
b. Yes, several steps were taken (*specify*)
c. Yes, minimal few steps were taken (*specify*)
d. No, not at all/ Not stated/ Can't tell (*specify*)

3. **Were steps taken to increase the rigour in the analysis of the data?** (*Consider whether: data analysis methods were systematic (e.g. was a method described/ can a method be discerned?); diversity in perspective was explored; The analysis was balanced in the extent to which it was guided by preconceptions or by the data; quality analysis in terms of interrater reliability/agreement; the analysis sought to rule out alternative explanations for findings (searching for negative cases/ exceptions, feeding back preliminary results to participants, asking a colleague to review the data, or reflexivity).*)

a. Yes, a (fairly) thorough attempt was made (*specify*)
b. Yes, several steps were taken (*specify*)
c. Yes, minimal few steps were taken (*specify*)
d. No, not at all/ Not stated/ Can't tell (*specify*)

4. **Were the findings of the study grounded in/ supported by the data?** (*Consider whether: enough data are presented to show how the authors arrived at their findings, the data presented fit the interpretation/ support the claims about patterns in data; the data presented illuminate/ illustrate the findings; quotes are numbered or otherwise identified and the reader can see they don't come from one or two people.*)

a. Yes, a (fairly) thorough attempt was made (*specify*)
b. Yes, several steps were taken (*specify*)
c. Yes, minimal few steps were taken (*specify*)

d. No, not at all/ Not stated/ Can't tell (*specify*)

5. **Rate the findings of the study in terms of their breadth and depth**. (*Consider 'breadth' as the extent of description and 'depth' as the extent to which data has been transformed/ analysed. Consider whether: A range of issues are covered; The perspectives of participants are fully explored in terms of breadth (contrast of two or more perspectives) and depth (insight into a single perspective); richness and complexity has been portrayed (e.g. variation explained, meanings illuminated)*; *There has been theoretical/ conceptual development*.)

   a. Good/ fair breadth and depth (*specify*)
   b. Good/Fair breadth, but little depth (*specify*)
   c. Good/ fair depth but very little breadth (*specify*)
   d. Limited breadth or depth (*specify*)

6. **To what extent does the study privileges the perspectives and experiences of participants/ECEC professionals?** (*Consider whether: there was a balance between open-ended and fixed response questions; participants were involved in designing the research; There was a balance between the use of an a priori coding framework and induction in the analysis; The position of the researchers (did they consider it important to listen to the perspectives of participants/ ECEC professionals); steps were taken to assure confidentiality and put participants at ease.*)

   a. A lot (*specify*)
   b. Somewhat (*specify*)
   c. A little (*specify*)
   d. Not at all (*specify*)

7. **Usefulness** (*Guidance: think (mainly) about the answers you have given to questions 4-6 above and consider: the match between the study aims and findings and the aims and purpose of the synthesis; its conceptual depth/ explanatory power.*)
   - **High** (*To be considered high studies need to be coded as the following on answer 4-to-6: 4. A - Well grounded AND 5. A or B or C AND 6. A or B*)
   - **Medium** (*To be judged as medium studies will not meet the criteria for High or Low (e.g. be limited on 4, 5 or 6) but will be AT LEAST 4. B - Fairly well grounded 5. A, B, or C. AND 6. at least B or C.*)
   - **Low** (*Studies are low if they are coded as 4: C - Limited OR 5: D - Limited OR 6: D - Not at all OR*)

8. **Reliability** (*Guidance: Think (mainly) about the answers you have given to questions 1-4 above: 1. Were steps taken to increase rigour in sampling; 2. Were steps taken to increase rigour in the data collected; 3. Were steps taken to increase the rigiour in the analysis; 4. Were the findings of the study grounded by the data. To be reliable all four questions need to have taken 'fairly or several steps' to be considered sound.*)

    - **High** (*To be judged as high studies need to answer at least several or fairly on all four criteria*
    - **Medium**
    - **Low**

Appendix 3: Quality appraisal criteria: Impact Studies

1. **Selection bias:**
    a. How was the study sample selected?
        i. Simple random sample
        ii. Systematic random sample
        iii. Stratified sample
        iv. One-stage cluster sample
        v. Two-stage cluster sample
        vi. Convenience sample
        vii. Non-equivalent control group design
        viii. Unclear
        ix. Not stated

    b. How were participants allocated to intervention- and control group?
        i. Random, no information given
        ii. Random, information given (*specify*)
        iii. Other (*specify*)
        iv. Not relevant – no control group
        v. Unclear
        vi. Not stated

    c. Which major prognostic factors are baseline values reported for?
        i. Ethnicity
        ii. Age
        iii. SES (income or class)
        iv. All pre-intervention outcome scores
        v. Some pre-intervention outcome scores
        vi. None

    d. Were baseline values of major prognostic factors reported for each group as allocated?
        i. No, values not reported by group
        ii. Yes for all individuals in study at baseline measurement
        iii. Yes for all individuals remaining in study for post-test and/or follow-up
        iv. Yes for some other subgroup of individuals
        v. Not relevant – no control group

    e. Are baseline values of major prognostic factors balanced between the groups in the trial?
        i. Groups are equivalent/balanced (*specify*)
        ii. Groups are not equivalent/balanced (*specify*)
        iii. Other (*specify*)

iv. Unclear (*specify*)
v. Not relevant – no control group

f. How did authors assess equivalence of the groups?
   i. Not assessed
   ii. They compared descriptive data
   iii. They used statistical tests
   iv. Unclear (*specify*)
   v. Not relevant – no control group

g. Did the analysis adjust for baseline imbalances in major prognostic factors between groups?
   i. Not relevant because groups were equivalent/balanced
   ii. Yes (*specify*)
   iii. No
   iv. Unclear because analysis is poorly described
   v. Not relevant – no control group

2. Detection bias:

a. Was the allocation to intervention and control groups done blind?
   i. Yes (*specify*)
   ii. No (*specify*)
   iii. Unclear (*specify*)
   iv. Not stated
   v. Not relevant – no control group

b. Were participants aware which group they were in for the evaluation?
   i. Yes
   ii. No
   iii. Unclear (*specify*)
   iv. Not stated
   v. Not relevant – no control group

c. Was outcome measurement done blind?
   i. Yes (*specify*)
   ii. No (*specify*)
   iii. Unclear (*specify*)
   iv. Not stated
   v. Not relevant – no control group

3. **Attrition bias:**
    a. Is the attrition rate reported separately according to allocation group?
        i. Yes
        ii. No (*specify*)
        iii. No drop-outs
        iv. Not relevant – no control group

    b. Was any information provided on those who dropped out of the study?
        i. Yes
        ii. Not relevant – no drop-outs
        iii. Unclear (*specify*)
        iv. No, not stated

4. **Selective reporting bias:**
    a. What outcomes did the authors say they were intending to measure?
        i. Child outcomes (*specify*)
        ii. Staff-child interaction (*specify*)
        iii. Quality (*specify*)
        iv. Unclear (*specify*)
        v. Not stated

    b. For whom outcomes reported?
        i. Information for all individuals/groups
        ii. Information for some individuals/groups only (*specify*)
        iii. Unclear (*specify*)
        iv. Not relevant – no control group

    c. For which outcomes were data collected at follow-up presented?
        i. Information for all outcomes
        ii. Information for some outcomes only (*specify*)
        iii. Unclear (*specify*)

    d. Are there any obvious errors in numerical reporting?
        i. Yes (*specify*)
        ii. No

5. Decision on soundness of study:

a. Was selection bias avoided? (*Study can pass if*: (*1) participants were allocated using an acceptable method of randomisation; (2) baseline values of major prognostic factors are reported for each group for virtually all participants as allocated AND if baseline values of major prognostic factors are balanced between groups in the trial OR imbalances were adjusted for in analysis)*
    i. Yes (specify)
    ii. No (*specify*)
    iii. Yes, to some extent (*specify*)

b. Was bias due to loss to follow-up avoided? (*Study can pass if the attrition rate is reported separately according to allocation group AND baseline values of major prognostic factors were balanced between groups for all those remaining in the study for analysis OR the attrition rate differs across groups by less than 10% and is overall less than 30%)*
    i. Yes (*specify*)
    ii. No (*specify*)
    iii. Yes, to some extent (*specify*)

c. Was selective reporting bias avoided? (*Study can pass if the authors report on all outcomes they intended to measure as described in the aims of the study)*
    i. Yes (*specify*)
    ii. No (*specify*)
    iii. Yes, to some extent (*specify*)

d. Is the study sound? (*To be sound a study has to avoid all three of the specified types of bias.)*
    i. Sound
    ii. Not sound
    iii. Sound despite discrepancy with quality criteria (*specify*)

Appendix 4: Details of CPD views studies: study characteristics

Author, date, title	Country	Aims and methods	Settings	Sample characteristics	Details of CPD studied	Results/Findings
Ang (2012). Leading and Managing in the Early Years: A Study of the Impact of a NCSL Programme on Children's Centre Leaders' Perceptions of Leadership and Practice.	United Kingdom	Explore children's centre leaders' perceptions of leadership and the impact of their professional qualification - the National Professional Qualification in Integrated Centre Leadership (NPQICL) - on their professional practice.	Preschool Group Care	359 ECEC practitioners (children's centre leaders)	- NPQICL: aims to ensure that all children's centre leaders have a clear sense of the role that they and their team play in improving the ECM outcomes for young children, and narrowing the gaps in achievements between those who are advantaged and those most disadvantaged in society. - The focus of the NPQICL is also on equipping child's centre leaders with the necessary leadership competencies in delivering integrated services that is core to their settings'	- 22 participant responses from the overall questionnaires and follow-up interviews found that their role as early years leaders was also an empowering one. - For others, their learning, reflective journey was centred more on their personal development, on what they had learnt about themselves since taking the course, and how this has impacted on their personal development. - In addition, there is also some evidence from the follow-up interviews that reflective learning can lead directly to changes in the participant's leadership and in turn to the setting's culture and style of working. - Responses from the questionnaires and fellow-up

					provision.	interviews indicate a strong commitment to reflective learning and practice as an important aspect of effective leadership.
Asplund Carlsson et al. (2008). From doing to learning and understanding. A study of teacher's learning within the aesthetic domain. (Translation from Swedish)	Sweden	Analyze pre-school teachers' discourses about children's aesthetic learning (music, dance/movement and poetry).	Preschool	- Preschool teachers - Nursery Nurses	- 18 months in-service training (lectures, workshops, video recorded observations)	The teachers felt they had become more aware of the "object of learning" in areas such as music and what they were supposed to teach children. They felt they had become more actively involved with children and could ask questions that would direct the child's attention and help the child discover and discern variations.
Aubrey et al. (2012). Enhancing Thinking Skills in Early Childhood.	United Kingdom	- Investigate two thinking skills programmes. - Explore whether a discrete CA approach and an infusion approach can enhance children's thinking skills and reasoning	4 schools in two local authorities (LAs), in England and Wales; two urban and two rural, mono-cultural and bilingual.	4 schools: - 12 children (5 - 6 years old) - Teachers, head teachers and advisors	- 'Key to Learning' - programme: 12 curricular programmes from sensory mathematics, logic to construction and 36 key activities for children aged 3-7 years. Each programme has 60	- All school staff interviewed felt that the Let's Think! programme enhanced their pupils' thinking skills, leading to more critical thinking and children thinking more for themselves. - They noted improved use of language, more attentive listening, increased social

		- Investigate whether such approaches transform teachers' practice.			sessions: 30 for young children and 30 for older children. Group work is emphasised. - 'Let's Think!' – programme: 27 special activities, plus 3 introductory listening activities for groups of up to six children.	cooperation and children having more confidence and independence. - All schools mentioned a noticeable impact on children with English as an additional language (EAL) and/or special educational needs (SEN). - All school staff interviewed felt that using the materials had not only changed teachers' practice but also had had a whole-school impact, with the use of the programmes leading to a thinking skills philosophy being used in other lessons and situations in three of the four schools. All teachers and coordinators said that the use of the programmes has changed how they taught, and they all stressed the importance of the quality of teacher and pupil talk, with questioning technique being the key.

Bleach (2013). Using action research to support quality early years practice.	Ireland	Examine the use of action research as a CPD tool by the Early Learning Initiative (ELI),	14 Community based ECEC Centres in two disadvantaged area's in Ireland	- Staff working in early childhood services in Ireland - 14 community-based ECCE centres	- Síolta, The Quality Framework for Early Childhood Education and Aistear, the Early Childhood Curriculum Framework. - Practitioner-oriented research - Mentoring	- The participants mentioned that they learned new ways of interacting with children. - They also felt that they had a greater understanding of the curriculum - Increased skills in critical Reflection - More planning and preparation for play - Participants could see more clearly where they fitted into the bigpicture, that they were at the beginning of the child's learning journey and that they provided the foundation for future learning. This enhanced their perceptions of themselves professionals. - The action research cycle supported the implement-tation of Síolta and Aistear. It also helped the practitioners develop the skills needed to improve the quality of teaching and learning in their centres. Using the Síolta reviews as instruments for

						reflecting on practice, was the key to the success of the programme.
Blenkin and Hutchin (1998). Action research, child observations and professional development: some evidence from a research project.	United Kingdom	Enable practitioners to find ways of improving their under-standing of both their professional role and the children's learning.	Nursery settings with under fives	The project's action researchers mainly worked in nursery settings with under fives.	- Action Research - Observations - Case Study	- The process of the analysis itself helped practitioners to gain confidence in their understanding. - Changes to practice initially occurred through planning new activities for the children, but later staff changed practice in more complex ways (e.g. improvements in staff-child interactions) - It is clear from the case study that practitioners show a deeper understanding of the impact of their provision on children's learning. There is also some evidence of this leading to developments in their practice. - The actual child observations themselves and the commitment to reflect on and analyse them was the key to change and development

						in this case study -Child observations made as part of the evidence gathering process of action research have had a definite impact on professional understanding and self critical awareness
Cardoso (2012). Creating contexts for quality in childcare: playfulness and learning. (Translation from Portuguese)	Portugal	Analyze the construction of an educational context that encourages the exploration and development of significant learning by the children. Explore how quality ECEC services impact children's learning and how the 'training in context approach' (with action research) ensures the production of new knowledge and continuous (trans)formation of participants and the educational contexts.	Private non-profit ECEC centre with children from 0 to 6 years old (crèche and pre-school) and after school activities	1 community crèche (0-3) Core participants: - 4 pre-school teachers, - 8 auxiliary staff, - 7 children (2 years old), - 4 parents.	- Action research based on observation and documentation - Training based on the needs of the staff	- Evolution in the view of children from 'spectators' towards 'participators' - Reconceptualization of the role of play in early learning from something children naturally do (without the involvement of the adults) towards something that gives children the possibility to intervene directly in the every-day life - Abandoning an academic pedagogy; which implied changing practices based on listening to the child: e.g. the educational environment (space and time) and the planning and assessment practices.

Craveiro (2007). Training in context: a case study in early childhood pedagogy. (Translation from Portuguese)	Portugal	Investigate the professional development process of a group of preschool teachers from a particular setting involved in a collaborative project ('Training in context') aiming at improving the quality of education for children.	1 private non-profit ECEC setting with crèche, pre-school and after school activities.	- 4 Pre-school teachers in 2001-2002 - 3 Pre-school teachers in 2003-2004 - All Pre-school teachers worked with children aged 3-6 - 39 children in 2001-2002 - 30 children in 2003-2004	- 'Training in Context': based in a supportive process of a supervisor (or critical friend) - The training specifically tackled 'difficult' issues for the teachers: e.g. planning and assessment of children's product and learning, project work, optimising space, time and group organization and improving interactions. - Duration: 4 academic years.	- Changes in the team climate: more openness to share and to collaborate, more team work between teachers and auxiliary staff, and between teachers mutually - turning into a more open and inclusive ethos, eager to improve quality, less defensive, pro-active in problem solving and in formulating challenges. - Teachers started to do planning based on child observations and the started to collect evidence of children's learning in individual files. They also started to report these assessments to parents. - Improved observation skills

Hayes et al. (2013). Evaluation of the *Early Years* Programme of the Childhood Development Initiative	Ireland	- Investigate the impact of the CDI Early Years programme on children's outcomes, parental stress and parent estimation of child social skills and behaviour. - Investigate the impact on outcomes in terms of environmental quality. - Examine the process of programme implementation.	ECEC services in a disadvantaged district of Ireland	Not clear: Roughly 6-8 practitioners attended each focus group and multiple sessions were held to facilitate the attendance of as many practitioners as possible. 1 practitioner from the intervention group participated in a focus group, once at the end of each year. Other relevant personnel (CDI speech and language therapists, CDI staff and programme trainers) were interviewed and/or consulted	- The Childhood Development Initiative (CDI): a 2-year programme targeted at children and their families in Tallaght West. It consisted of: - direct provision, of a low-cost, flexible and broad-based curriculum operating within the principles of HighScope for 4 hours 15 minutes per day, 2 years - minimum qualifications of FETAC Level 5 in childcare or equivalent - observation of children's learning	- The HighScope training was the most significant aspect of the programme. - After one year, practitioners felt more confident and they were more satisfied. - The first year of the programme should be considered a 'bedding-in period'. - By training practitioners and offering an SLT service to Early Years children, children with speech and language needs were identified and treated at an early age. - Communities of Practice meetings were identified as very supportive. It helped the practitioners to reflect and it gave them a sense of how manual implementation was progressing in other services.

Johansson et al. (2007). Practitioner-oriented research as a tool for professional development.	Sweden	- Analyze how directed research could be used as a tool for professional development in the preschool. - Facilitate change, improvement and development in the local practice of the preschool.	2 local authorities	Fifteen working teams consisting of 44 staff (33 preschool teachers and 11 day care attendants)	- Participatory research: collaboration between researchers and the working team in preschools to facilitate development of knowledge in their local setting. - After an introduction, each working team formulated their own theme that they wanted to do research on.	- Increased use of networks to share experiences and to learn from each other. - Network-based work promotes a widening of perspectives, to see things in a new light and through new glasses. - Research is seen as a possible source to legitimise the ongoing work by confirming the things that work out fine. - Research and developmental work is seen as a tool to make daily work more exciting, stimulating and varied, which promotes pleasure in the work. - Research is regarded as contributing to developing, changing and improving the general work done in the preschool sector. - The increased importance of seeing the management is regarded as a potential way to develop the pedagogical

						dialogue between the working team and the management.
Jopling et al. (2013). The Challenges of Evaluation: Assessing Early Talk's Impact on Speech Language and Communication Practice in Children's Centres.	United Kingdom	Provide impartial evidence of how the Early Talk programme has influenced staff and enhanced their ability to provide high-quality speech and language and communication support for preschool children in children's centres settings.	14 children's centres	Not explicitly stated: all practitioners working in the 14 children's centres were involved.	- Early Talk (ET): Early Years' intervention programme designed to improve speech, language and communication outcomes for children aged 0-5 by focusing on enhancing practitioners' knowledge and skills.	- The findings demonstrate that, in broad terms, the more experienced practitioners felt that ET reinforced and validated existing good practice, while the less experienced were encouraged by the ET project to improve their knowledge and understanding of SLC. - Practitioners felt that ET developed both their procedural knowledge and their propositional knowledge - Increasing confidence about knowledge - Development of consistent behaviour and skills in the centres through challenging existing processes - Several centres developed greater use of resources to support communication

						with all children, not just those with SLC difficulties - Improved staff-child interactions following the implementation of ET.
Leal (2011). Educating the citizen from kindergarten: the contribution of early childhood educators' assessment practices in collaboration with the family (Translation from Portuguese)	Portugal	Analyze the impact of an in-service 50h course about child assessments and parental involvement.	Private non-profit ECEC setting; children aged 0-6	- 17 parents - 6 teachers (3 working in crèche; 0-3 and 3 working in preschool; 3-6).	- Educational programme for ECEC practitioners, involving 50 hours of assessment of competencies - Action research - Supervision	- Impact on the learning assessment practices at a micro level: decisions made in the activities room. - At a meso level: decisions made within the institution.
Lino (2005). From academic training to training in context: an innovative path to the reconstruction	Portugal	Evaluate the impact of in-service teacher training on preschool teachers' professional development, the quality of the	40 pre-school classrooms either from state pre-schools or private non-	- Two groups of 20 pre-school teachers each belonging to each type of CPD program (A and B).	2 specialised in-service courses (CESES). - Course A is a context based training with an	- Better quality of practice in group A, independently from the academic level of the teachers. - Teachers highlight the

of early childhood pedagogy. (Translation from Portuguese).		educational contexts and children's learning.	profit pre-schools.	- All teachers (all female) have 5 or more years of experience. - 320 children from 40 classrooms	emphasis on ECEC pedagogy with its varied dimensions and supervision of the pre-school teachers. - Course B is a traditional one, with an emphasis on academic subjects from one curricular area; it perceives professional development as an individual process based on acquiring sound theoretical foundations without a concern about the context.	importance of learning about different ECEC pedagogies - Teachers emphasize the importance of reflective processes; informed by theoretical references. - Child involvement in adult initiated activities was higher in group A. - The study highlights that not all kind of training is a guarantee for children's learning.
McMillan et al. (2012). Changing Mindsets: The Benefits of Implementing a Professional Development Model in Early Childhood Settings	Ireland	Evaluate the implementation of the 'Professional Development Model' (PDM).	5 settings: two infant classes, one daycare, two sessional playgroups	- 5 practitioners working within these settings and the children attending these settings	- Professional Development Model (PDM): constructed on a socio-cultural theoretical framework whereby Vygotsky's zone of proximal development was	- Implementation of the PDM has benefits at personal and professional development levels and also at early years setting level. However, benefits to the early years professional community were limited. - Increased pedagogical

in Ireland.					applied in the context of early years professional development. - Over a 16-working-week period	awareness - Greatest impact on the quality of the teaching strategies of the practitioners. - Not all settings benefited to the same extent from implementation of the PDM.
Menmuir and Christie (1999). Encouraging professional reflection in early education.	United Kingdom	Examine the use of the Repertory Grid Technique to aid the reflection of ECEC professionals.	Different settings: - early stages of primary school - nursery classes - children's centres or family centres	- 7 practitioners who attended one of the postgraduate modules of the DipEE award during session 1996-97	- Repertory Grid Technique: derived from personal construct theory as a tool to aid the reflection of teachers and other professional working in Early Education. - 'Children's Development and Learning' - module, which formed part of a continuing professional development postgraduate award in Early Education.	- Participants stated that they felt the Rep Grid had been a useful but challenging exercise. - Increased skills in critical reflection - The complexity of the participant's set of constructs concerning children increased from the first to the second grid completion exercise. - It was clear that all participants had found that the exercise had 'made them think' more about the children or think about them in different ways.

Oliveira-Formosinho and Araújo (2011). Early education for diversity: starting from birth.	Portugal	- Identify the main characteristics of a pedagogical approach that are most effective in the promotion of respect for diversity.	Not stated	- 6 early childhood teachers	- Pedagogical perspective for early childhood education and teacher training. - Context-based teacher education approach. - Process of conscientisation (Freire, 1970)	Not stated
Peeters (1993). Quality improvement in the childcare centers with the support of the Bernard Van Leer Foundation (Translation from Dutch)	Belgium	The article reports about the results of the investments, made by the Bernard Van Leer foundation. During 13 years, different studies and projects were undertaken by staff members of the Van Leer projects.	Preschools Family Day Care	Not stated	- Training - Pedagogical guidance - Supervision	- Increase in the variety of activities and playthings - Improvements in staff-child interactions: more individualized approach - Improvements in the furnishing of the playing space - Noticeable progress with regard to the accessibility of the playthings - Improvements in parental involvement (e.g. increase in organizing parent get-togethers) - In the first year, there is a

						lot of resistance towards change. Results occur from the second year onwards.
Peeters and Vandenbroeck (2011). Childcare practitioners and the process of professionalization.	Belgium	- Illustrate the evolutions in childcare workers' professionalism and professionalization processes in Flanders by analysing the data collected through 30 years of action-research carried out within the Department of Social Wefare at Ghent University	Not stated	In total, 30 documentaries, featuring 84 practitioners, 23 parents and six children were analysed by the researchers.	- Participatory research: working as 'actors of change' - Action research	- The staff members' narratives demonstrate that being involved in a process of change, gives them hope and self-confidence, and increases their job satisfaction. - Major changes in professional attitudes towards the parents. Improvements in parental involvement, aiming to increase the wellbeing of the children. - Action research, raises the possibility of questioning the social position of research. Practitioners may be identified as 'actors of social change' as they, together with the researchers, played an active role in a process of change that aimed to increase the level of professionalization over the past 30 years. - Dealing with diversity

						presents the early years practitioners with complex problems that cannot be solved with a technical body of knowledge, since they ask for interpretations of professionalism based on continuous reflection on their practice as well as the need to move beyond reflection and develop the ability to be reflexive.
Peixoto (2007). The physical sciences and laboratory activities in preschool education: diagnosis and evaluation of the impact of a training program for early childhood educators. (Translation from Portuguese)	Portugal	Evaluate the impact of an in-service training programme	14 state preschools	16 preschool teachers, working with children of 3-6 years old	In-service training programme: 11 sessions of 2 hours, containing: - Theory: pedagogical issues - Practice - Reflections + group learning - Implementation project	- The overall evaluation of the programme showed that teachers overcame most of their initial conceptual and methodological difficulties; - The facilitator role of the teacher educator (supervisor) was a crucial factor for the change of teachers' practices; participants' conceptions about lab activities and their use in science teaching developed in such a way as they got closer to the conceptions accepted by the specialists in this area.

Picchio et al. (2012). Documentation and analysis of children's experience: an ongoing collegial activity for early childhood professionals.	Italy	- Elaborate and implement documentation procedures that nido practitioners can accomplish continuously and that can form the basis of a collegial reflection on children's experience and the improvement of practices.	Nido's in Pistoia	- Pedagogic coordinators in Pistoia, - 7 nido practitioners, and - 5 researchers from the research agency	- Action research - Documentation	- Change of focus: this meant that teachers needed to focus their attention on significant elements underlying the flow of everyday life in the nido rather than on the behaviour of individual children or on specific moments of everyday life. - Systematic documentation, analysis and evaluation of educational practices can be a powerful tool of continuous support to the professionalism of early childhood education practitioners - Improvements in critical thinking
Potter and Hodgson (2007). Nursery nurses reflect: Sure Start training to enhance adult child interaction.	United Kingdom	- Explore the impact of a training approach designed to improve both the reflective practice and knowledge of nursery nurses in the area of adult child interaction (ACI).	2 Sure Start children's centres	- 5 Nursery nurses - The course was delivered to five staff working within a Sure Start programme in the north of England	- Structured training intervention programme: The Adult Child Interaction (ACI) course: The ACI course consisted of 12 sessions, six of which	- The work-based visits helped practitioners to make vital links between theory and practice within their own setting: - A focus on enabling children to take a greater lead in individual interactions

					took the form of two-hour teaching sessions, during which training was delivered on key aspects of language and communication supported by the viewing of practice video clips of staff interacting with children. The other six sessions, delivered on alternate weeks, took the form of work-based support visits during which the SLT observed staff practice informally in their early years settings, providing supportive comment and advice linking practice to formal training.	- Changing role of staff: acting more as facilitators rather than directors of play sessions. - Staff began to challenge their own ways of working as a result of viewing video clips of their practice - Staff began to engage in a process of critically reflecting on their practice in a number of important ways - The viewing of videotapes in group was particularly helpful in generating new critical insights, especially in later training sessions when staff had become more skilled at being able to identify, understand and challenge what they were seeing.
Richter (2012). Teaching competence of preschool teachers in the field of natural science. A	Germany	- Study the effectiveness of the training program "Versuch macht klug" in enhancing teachers' competency to	Day care centres in Schleswig-Holstein	24 ECEC practitioners were interviewed, six months after the training	- The intervention is specifically directed towards improving staff competency in enhancing science education in day-care	- As a result of the training, teachers experienced a positive development with regard to interest, frequency of experiments, self-concept, expertise and methodical

quantitative and qualitative study of competence development in the context of an advanced training programme. (Translation from German)		support children in their exploration of natural scientific phenomena. - The study evaluates whether the training had an effect on dispositions and personal, communicative, motivational, methodical and practical competencies as measured through self-assessment.		intervention	centres in the context of the training program "Versuch macht klug" ('Learning by doing') - The training intervention programme follows a 4 days curriculum. It stimulates teachers' own explorative learning and a positive attitude towards sciences and experiments.	skills. The effects persisted also 6 months after the training intervention. - Results showed that teachers successfully developed individual ways to integrate sciences into their work with children. - Time and age of the children however were seen as restricting factors.
Rönnerman (2003). Action research: educational tools and the improvement of practice.	Sweden	- Discuss an in-service training project. Explore in what way educational tools in an action research project can be useful in teachers' improvement	- Early childhood teachers - One group of six work teams each work team consisted of 3 people. = 18	The area, chosen for this project, has about 30 pre-schools and is an area where many immigrants with different cultures and different languages are living.	- Action Research was used as an in-service training connected to the curriculum - Documentation	- The teachers became more aware of how they were interacting with the children. They now let the children take more room and were not so eager to teach them but to let them try for themselves from their own level of Knowledge. - Data also shows that daily work is no longer only pre-

						planned but now more open to the children's needs and ideas that arise during the day. - Exchanges between the work teams in the same pre-school have evolved where they share ideas. They have become aware of new perspectives, and exchanged ideas and practical examples to be used in their own setting. - The teachers stress that they have learned a lot, which they express as a greater awareness and self-confidence in work, and a greater belief in themselves. - By observing and questioning their own practices, the teachers find that they feel more secure in labelling what they are doing, which in turn contributes to their expressions in talking with colleagues and the children's parents

Rönnerman (2008). Conscious quality work. Follow up of course Q in preschool and the implications for preschool teachers in their daily practice. (Translation from Swedish)	Sweden	- Investigate and follow up the possible implications for practice of preschool practitioner's participation in an action research course. - Search for critical elements that may be crucial for such courses when it comes to impacts on development and thus on the quality of the preschools.	Preschool centres from 7 municipalities	- 114 preschool teachers from 7 municipalities participated in the course - 114 preschool teachers participated in the follow up questionnaire	- Action Research Course	- Impact on quality: the preschool teachers felt that they made use of the knowledge and skills (tools) they acquired from participating in the action research course which they felt led to quality improvement in the preschools.
Share et al. (2011). Developing early years professionalism. The evaluation of the Early Learning Initiative's professional development	Ireland	- Analyse to what extent awareness has been raised amongst childcare practitioners about parental involvement in children's learning. - Describe which	- Dockland community childcare centres	- The childcare providers participating in this evaluation are a diverse group, but have some features in common that affect both the extent to which	- Parental Involvement in Children's Learning Training: - The PICL framework offers a specific methodology where practitioners and parents adopt a partnership approach	- Staff are becoming being more deliberate in their approach to involving parents and are being more reflective on their own practice in this regard. - Encouragement of children's autonomy

programme for community childcare settings in the Dublin Docklands.		elements of the PICL training worked best, and for which groups.		parents engage with the centres and their child's learning and the expectations that they have of the education system. - They are providers in poor areas	to systematically documenting, planning and extending children's learning through sharing child development concepts. It positions the parental role as learner and educator. The framework promotes a continuous two-way flow of information from early years setting to home and from home to setting.	- A clearer focus on learning through play. - All centres have introduced a portfolio for each child, and this was described as a major change in practice as a result of the PICL training, and one that is very likely to be sustained in the future. - A challenge facing centres is insufficient non-contact time to develop and update the portfolios. - A supportive network of centres and practitioners has emerged - Increase in one-to-one time between staff and children
Sheridan et al. (2013). Systematic quality-work in preschool.	Sweden	- Investigate the meaning that Swedish preschool teachers ascribe to systematic quality work - The question addressed is, how do	Swedish preschools	- The sample consists of 15 preschools in the country's two major cities, Stockholm and Gothenburg, and 15 preschools from	- Pedagogical documentation: documentation of the relationship between the child, the environment, and the teachers' approaches	- Shift in the foci of documentation, from a narrative description of preschool activities to documentation of children's learning, required a development in their own competence to observe and

		teachers talk about systematic quality work in relation to children's learning and development and to preschool quality?		the rural area of Malardalen in mid-Sweden. - The participants' professional experience ranged from just a few years post-qualification, to over 40 years in the profession.	- Systematic Quality Work	to document children's learning. - Documentation is also used as a tool for teachers to see their own competence and to guide them in their work. It helps them to see that they are doing the right things with the children, which in turn makes them feel confident in themselves. - Documentation can be interpreted as a tool empowering teachers to critically analyse their own work in relation to the objectives of the curriculum - Documentation helps practitioners to create better conditions for children's learning and development in preschool.
SQW (2012). Evaluation of the 3,4,5 Learning Years Services	Ireland	- Investigate the impact of the 3, 4, 5 Learning Years Service on practitioners and on the quality of	Preschool settings that have engaged with the, 3, 4, 5 Learning Years	- 8 Preschool settings	- 3,4,5 Learning Years Service - HighScope: Evidence based curriculum	- Marked changes in both the environment and in children's ability to make choices, express their ideas, experiment, solve problems,

Youngballymun.		preschool provision in Ballymun	Service		- Siolta: Quality framework for ECEC in Ireland.	act independently, engage in learning, communication with each other and with practitioners - Improved child outcomes: literacy, numeracy, school readiness - Improved staff-child interactions - Greater time allocated to free play and fun activities - Engagement with HighScope was giving practitioners more confidence in their work - The training received and coaching support from the HighScope coordinator encouraged practitioners to do things differently, which they could see was of benefit to the children. - Increased staff skills and ability to reflect upon practice - More effective team work

Van Keulen (2010). The Early Childhood Educator in a Critical Learning Community: Towards Sustainable Change.	The Netherlands	- Investigate how sustainable change within childcare-providing organisations can be created. - Investigate how a learning process with early childhood educators (+ collective team learning can be created. - Investigate how wide support for innovation and change at every level of childcare-providing organisations can be created.	- 4 childcare providing organisations	- Educators, middle managers and staff members - In the project, 60 educators and 10 managers were trained for a period of 10 months. - The educators in the action research project qualified in the Netherlands at a vocational training level	- Action–training–research: In the action–training–research project, the model for sustainable learning in the professional learning community was co-constructed with 4 childcare-providing organisations	- Increase in reflective skills - Increase in group reflection - The educators learned to formulate their own learning targets based on their questions and dilemmas and to document their actions and results. - Educators began to see a larger picture: the location and function of their own organisation in its neighbourhood. This awareness of the context furthered cooperation with parents and the neighbourhood. - In order to realise the new learning methods the professionals needed intensive coaching.
Vonta et al. (2007). Mentoring in the professional development of a teacher and a preschool teacher.	Slovenia	- Analyze the principles of life-long learning as a continuous process. - Improve the quality of preschool teachers'	Preschool settings	- Preschool teachers (mentors and practitioners) - 12 preschool settings	- Portfolio - Mentoring - Self-evaluation - Self-reflection	In the teachers' opinion, the quality of self-evaluation and self-reflection is closely related to the professional knowledge. They recognize a professional portfolio as an important tool for sustaining

(Translation from Slovenian)		work by enabling and developing teams of mentors who support the professional workers in their work and life-long learning.			- Use of ICT	professional development.
Vujičić (2008). Research and Improvement of One's own Practice – Way to Development of Teachers'/preschool teachers' Practical Competence.	Croatia	Train preschool teachers for the research and improvement of their own practice, and for direction of their own professional development within the process of lifelong learning	Preschools of the Istra County, coming from Pula (2), Labin, Poreč, Rovinj and Pazin	- 12 Preschool teachers of the Istra County, and 1 researcher. - 2 preschool teachers coming from each nursery school were involved in the action research	- Action Research	- Preschool teachers initiated changes in their physical environment in another way. They started to bring various materials for playing (unshaped materials) - When the preschool teachers freed themselves from jitters, they started to breathe more freely, change their environment more independently and daringly, and observe the way how these changes were experienced by their children. - The quality of staying in the nursery school has increased by the introduction of self-service meals and not obligatory sleeping.

Wood and Bennett (2000). Changing theories, changing practice: exploring early childhood teachers' professional learning.	United Kingdom	Provide understanding of what actually happens in classrooms by exploring the relationship between teachers' theories of play and their practice, and the reasons for any discontinuities.	7 schools in the southwest of England, 3 in rural and 4 in urban areas.	- 9 ECEC Teachers of varying experience - 4 of the teachers taught mixed-age classes: 1 nursery/ reception (3/4-4/5), 2 reception/Year 1 (age 4/5-5/6) and 1 reception/Years 1 and 2 (age 4/5-5/6-6/7). - Four of the teachers were novices, and five were experienced.	- Participatory research	- As an unintended outcome of their close involvement in the data collection and analysis, all of the teachers changed their theories, or practice, or both - Changing views on training - Changing views on what children do - Improvements of practice and daily planning - Improved play experiences in the classroom - Positive development in professional knowledge - Provision of quality learning through play

Appendix 5: Details of CPD views studies: methodology

Author, date, title	Study design summary	Sample	Data collection methods	Data analysis methods
Ang (2012). Leading and Managing in the Early Years: A Study of the Impact of a NCSL Programme on Children's Centre Leaders' Perceptions of Leadership and Practice.	- Qualitative	- 359 ECEC practitioners; stratified sampling strategy, based on two main categories of stratification. First, in terms of the cohort of participants who graduated from the NPQICL. In this case, it was decided that the first cohort of students who undertook the NPQICL in 2005/6 would be the target population. The second stratification category was the geographical spread of children's centres, and the third stratum, the context of settings such as rural or urban.	- Questionnaire - Follow up interviews (semi-structured)	Not stated
Asplund Carlsson et al. (2008). From doing to learning and understanding. A study of teacher's learning within the aesthetic domain. (Translation from Swedish)	- Qualitative	- 9 teams of ECEC professionals	- Interviews - Observations	- Discourse Analysis

Aubrey et al. (2012). Enhancing Thinking Skills in Early Childhood.	- Qualitative - Case study approach using 2 sites	4 schools in two local authorities (LAs), in England and Wales; two urban and two rural, mono-cultural and bilingual. - 12 children (5 - 6 years old) - Teachers, head teachers and advisors	- Interviews - Observations	- General inductive approach: Analysis was sequential, proceeding from analysis of national curriculum documents to programme material, through interviews with professionals, to lesson observation analysis and reflections. - Interview data were analysed at the first level, using a priori categories derived from the questions that were asked and at the second level, with grounded categories emerging from these first-level categories through a process of constant comparison of instances and events.
Bleach (2013). Using action research to support quality early years practice.	- Qualitative - Action Research	- Staff working in early childhood services in Ireland - 14 community-based ECCE centres	- Observations - Documentation - Field notes	- Thematic Analysis

Blenkin and Hutchin (1998). Action research, child observations and professional development: some evidence from a research project.	- Qualitative - Action Research	The project's action researchers mainly worked in nursery settings with under fives	- Observations - Interviews - Group reflection - Documentation	- Phenomenological Analysis - As part of the evaluation process both the research associate and the action researcher examined some of the collected evidence together, so that two views could be given on one piece of evidence. Further support came through establishing networks of action researchers where they met to discuss their action research.
Cardoso (2012). Creating contexts for quality in childcare: playfulness and learning. (Translation from Portuguese)	- Qualitative - Action Research - Case Study	1 private non-profit ECEC centre (community crèche (0 -3)) Core participants: - 4 pre-school teachers, - 8 auxiliary staff, - 7 children (2 years old), - 4 parents	- Observations of children - Interviews with teachers, children and parents - Documentation	- Framework 'Thematic' Analysis: a priori themes such as beliefs, values and knowledge; practical actions; transformations - The analysis was also inductive taking on board emerging issues and categories.

Craveiro (2007). Training in context: a case study in early childhood pedagogy. (Translation from Portuguese)	- Mixed method (only qualitative part included) - Action Research - Case Study	1 private non-profit ECEC setting with crèche, pre-school and after school activities. - 4 Pre-school teachers in 2001-2002 - 3 Pre-school teachers in 2003-2004 - All Pre-school teachers worked with children aged 3-6 - 39 children in 2001-2002 - 30 children in 2003-2004	- Interviews with professionals, parents and children - Participant observation - Diary study - Documentation	- Documental analysis - Framework 'Thematic' Analysis
Hayes et al. (2013). Evaluation of the *Early Years* Programme of the Childhood Development Initiative	- Mixed method: a quantitative assessment of the programme (Randomized Controlled Trial) and a qualitative assessment of the implementation 'process'.	Not clear: roughly 6-8 practitioners attended each focus group and multiple sessions were held to facilitate the attendance of as many practitioners as possible. 1 Early Years practitioners from the intervention group participated in a focus group, once at the end of each year.	- Process evaluation via consultation with parents, Early Years practitioners and CDI staff. - Focus groups with practitioners - Documentation: minutes, progress reports, manuals - Interviews	Not stated

Johansson et al. (2007). Practitioner-oriented research as a tool for professional development.	- Qualitative - Mixed method: two questionnaires and one interview	Fifteen working teams consisting of 44 staff (33 preschool teachers and 11 day care attendants) from 2 local authorities in Sweden.	- Questionnaires - Interview - Focus group	- Constant Comparative: analysis is based on questionnaire and interviews in transcript-based form. The data processing was initiated with a read-through of all questionnaires and interview transcripts. The parts of the statements which were off topic were omitted, and so were recurring statements.
Jopling et al. (2013). The Challenges of Evaluation: Assessing Early Talk's Impact on Speech Language and Communication Practice in Children's Centres.	- Qualitative - Multi-method evaluation	14 children's centres; divided into 3 groups outlined according to their stage of ET implementation. The centres were situated in a range of locations across England. 9 of the centres (64%) were located in the 30% most disadvantaged areas of England	- Case study: used to disseminate the findings of the research and to provide additional data - Interviews (telephone + face to face) - Focus groups - Observations - Documentation - Questionnaire - Mapping of likewise initiatives	- Cross-case analysis was undertaken to identify additional themes - The data were then analysed thematically using an iterative and evolving process consistent with grounded theory

Leal (2011). Educating the citizen from kindergarten: the contribution of early childhood educators' assessment practices in collaboration with the family (Translation from Portuguese)	- Qualitative - Action Research	- 17 parents - 6 teachers (3 working in crèche; 0-3 and 3 working in preschool; 3-6).	- Interviews - Case Study - Participant observations - Supervision	- Documental Analysis
Lino (2005). From academic training to training in context: an innovative path to the reconstruction of early childhood pedagogy. (Translation from Portuguese).	- Mixed method (only qualitative part included) - Comparative evaluative case-studies	- Two groups of 20 pre-school teachers each belonging to each type of CPD program (A and B). - All teachers have 5 or more years of experience. - 320 children from 40 classrooms either from state pre-schools or private non-profit pre-schools.	- Observations - Semi-structured interviews	- Thematic Analysis
McMillan et al. (2012). Changing Mindsets: The Benefits of Implementing a	- Qualitative	- 5 settings: two infant classes, one daycare, two sessional playgroups - 5 practitioners working within these	- Case-study interviews, - Reflective diaries	- Thematic Analysis - Comparison with pre- and

Professional Development Model in Early Childhood Settings in Ireland.		settings and the children attending these settings - Recruitment: not stated - Sampling frame: not stated	- Observations of the settings using the quality learning instrument to evaluate the quality of the learning experience before and after using the PDM - Assessment: The quality learning instrument (QLI)	post evaluation using the QLI
Menmuir and Christie (1999). Encouraging professional reflection in early education.	- Qualitative	- 7 practitioners who attended one of the postgraduate modules of the DipEE award during session 1996-97 - Practitioners were drawn from a range of early years backgrounds with some working at the early stages of primary school with children aged 5 and 6 years, some in nursery classes for 3- to 5-year-olds and others working in children's centres or family centres with responsibility for children from 0 to 5 years.	- Case Study - Semi-structured interviews - Dairy studies - Rating - Group discussion	- Content Analysis - A range of factor analytic procedures: FOCUS (cluster) analysis and PRINCOM (principal components) analysis were performed on both sets of participants' grids, those from the beginning of the module and those from the end

Oliveira-Formosinho and Araújo (2011). Early education for diversity: starting from birth.	- Qualitative - Multi-context case study	- 6 early childhood teachers - Sampling frame not stated	- Case study	- Not stated
Peeters (1993). Quality improvement in the childcare centers with the support of the Bernard Van Leer Foundation (Translation from Dutch)	- Qualitative	Not stated	- Interviews - Observations - Questionnaires - Dairy study - Focus groups	Not stated
Peeters and Vandenbroeck (2011). Childcare practitioners and the process of professionalization.	- Qualitative - Action Research	- The practitioners, parents and children in the videorecording analysed took part in one of the 11 action-research project carried out by the Department of Social Welfare of Ghent University - The researchers recruited practitioners who had reflected on the problematic situation and had experimented successfully with the problem.	- Video documentaries - Observations - Interviews	- 30 documentaries, featuring 84 practitioners, 23 parents and six children were analysed. The focus of the analysis is on the 'little narratives' (Lyotard, 1979) of the actors of change themselves. - Specific method not stated

Peixoto (2007). The physical sciences and laboratory activities in preschool education: diagnosis and evaluation of the impact of a training program for early childhood educators. (Translation from Portuguese)	- Qualitative	- 16 preschool teachers	- Interviews - Observation	- Document Analysis
Picchio et al. (2012). Documentation and analysis of children's experience: an ongoing collegial activity for early childhood professionals.	- Qualitative - Action Research	- A research group was set up, comprising the pedagogic coordinators in Pistoia, 7 nido practitioners, and 5 researchers from the research agency. - A cascading procedure, which was inscribed within a framework of in-service training, provided the involvement of all the Pistoia nido practitioners in the action research.	- Group discussions - Documentation - Report writing	- Narrative analysis: All the discussions made during the 11 research group meetings (n and the 3 general meetings were recorded and entirely transcribed.
Potter and Hodgson (2007). Nursery nurses reflect: Sure Start training to enhance adult child interaction.	- Qualitative	- 5 nursery nurses working in Sure Start children's centres	- Focus groups - Semi-structured interviews - Pre- and post-training video clips	Analysis of pre- and post-training videotape

Richter (2012). Teaching competence of preschool teachers in the field of natural science. A quantitative and qualitative study of competence development in the context of an advanced training programme. (Translation from German)	- Quasi-experimental panel design involving a control group The quantitative survey was complemented by qualitative interviews - Only qualitative part included.	- 24 ECEC practitioners were interviewed, six months after the training intervention. - Day care centres in Schleswig Holstein.	- Semi-structured interviews	- Qualitative content analysis
Rönnerman (2003). Action research: educational tools and the improvement of practice.	- Qualitative - Action research	- Thirty work teams from pre-schools had access to in-service leaders for two-and-a-half years with the aim of improving their practice. To carry out an effective evaluation, the researcher followed one group of six work teams by interviewing them and collecting an individually written survey once a year	- In-depth interviews - Focus groups - Diary study - Observations - Documentation	Not mentioned
Rönnerman (2008). Conscious quality work. Follow up of course Q in preschool and the	- Qualitative - Web based questionnaire	114 ECEC professionals from 7 municipalities:	- Web based questionnaire	- SPSS - Thematic Analysis

implications for preschool teachers in their daily practice. (Translation from Swedish)		- Preschool teachers - Nursery Nurses - 12 Heads of preschools		
Share et al. (2011). Developing early years professionalism. The evaluation of the Early Learning Initiative's professional development programme for community childcare settings in the Dublin Docklands.	- Qualitative - Participatory research	- 5 childcare centres: including managers, childcare staff and children within these centre - A research reference group was formed comprising childcare practitioners from the five centres, and the two key CRC researchers.	- In-depth interviews - Focus groups - Observations - Documentation - Questionnaire	- Thematic Analysis - Data analysis commenced as soon as data was collected. It consisted of processing information, reflecting upon it, discussing it among the research team and feeding back insights and issues for clarification to the Research Reference Group.
Sheridan et al. (2013). Systematic quality-work in preschool.	- Qualitative	- 30 preschools - Both of the two urban regions and the rural area have been stratified to represent districts that differ geographically, demographically, ethnically, and which include a variety of socioeconomic structures.	- Semi-structured interviews conducted at the teacher's workplace (60-120min) - The teachers were asked to describe the ways in which they gain knowledge of children's	- Abduction: the analyses focussed on how the teachers talk about systematic quality work in relation to their competence, approaches, children's learning and curriculum objectives. - All of the interviews were

		- The principal of each preschool was asked to select the participating classes and teachers on the basis of both the competence of the teacher and the teachers' own interest in participating.	learning and development in relation to curriculum objectives.	read and studied repeatedly. - The analyses were continuously related to interactionist and ecological theories and research on the documentation and evaluation of preschool quality.
SQW (2012). Evaluation of the 3,4,5 Learning Years Services Youngballymun.	- Qualitative	All 8 of the preschool settings that have engaged with the, 3, 4, 5 Learning Years Service agreed to participate in our research.	- Semi-structured interviews - Observations - Questionnaire - Assessment	- Realistic evaluation (to explore people's assumptions about what works and why – and in what circumstances) - Baseline Preschool Programme Quality Assessment (PQA) which evaluates the extent to which the curriculum is being delivered with fidelity.
Van Keulen (2010). The Early Childhood Educator in a Critical Learning Community: Towards Sustainable Change.	- Qualitative - Action Research	- Educators, middle managers and staff members of 4 childcare providing organisations	- In-depth interviews - Diary studies	Not stated

Vonta et al. (2007). Mentoring in the professional development of a teacher and a preschool teacher. (Translation from Slovenian)	- Qualitative - Action research - Development research	- 12 preschools - Professionals were divided in two groups: mentors and mentorees	- Questionnaire - Evaluation during mentoring process	- Frequencies, structural shares and χ2 were used to analyse the data.
Vujičić (2008). Research and Improvement of One's own Practice – Way to Development of Teachers'/preschool teachers' Practical Competence.	- Qualitative - Action research	- 12 teachers of the Istra County, and 1 researcher. - 2 preschool teachers coming from each nursery school were involved in the action research	- Observations - Group discussions	- The observation and video recording of educational practice, as well as shared analysis and discussion on the implemented activities took place every month (6 meetings altogether) - The video recordings of the discussions held in every nursery school served us as a basis for documenting the context and process of learning - The monitoring of the preschool teachers' work and complete atmosphere in the nursery schools was followed by analyses (discussions)

Wood and Bennett (2000). Changing theories, changing practice: exploring early childhood teachers' professional learning.	Qualitative	- Nine teachers of varying experience participated in the study throughout one school year - They had been identified by colleagues and local education authority advisers as committed and capable practitioners in the use of play activities	- Semi-structured interviews - Observations - Documentation - 1 pre-observation questionnaire - 3 Group discussions	- Grounded theory approach - Content analysis: to reveal patterns and layers of understanding - Constant comparative technique: to identify categories and sub-categories - From the narrative accounts, an initial map of key concepts and theories was designed. 7 broad categories emerged and were discussed with the teachers at the first group meeting. - These categories informed the design of the semi-structured interview schedule. - The interviews were transcribed and subsequently analyzed independently by two researchers - The resulting interpretation was discussed and verified at the second group meeting

Appendix 6: Details of WC views studies: study characteristics

Author, date, title	Country	Aims and methods	Settings	Sample characteristics	Details of WC studied
Blatchford et al. (2001/2002). Relationships between Class Size and Teaching: A Multi-method Analysis of English Infant Schools.	United Kingdom	- Explore the relationships between teaching and class size through the use of methods that capture teacher experiences and through detailed case studies. - Data comes from longitudinal research Class Size Project, involving two large cohorts.	330 classes in cohort 1 (199 schools under 9 local education authorities); 212 classes in cohort 2 (134 schools under 6 local educational authorities).	Data reported in this study comes from questionnaires completed by: - 151 reception teacher (cohort 2) in 1998; - 130 Year 1 teachers (cohort 1) in 1998; - 130 Year 1 teachers (cohort 2) in 1999; - 153 Year 2 teachers (cohort 1) in 1999.	- Class size.
Sandstrom (2012). The characteristics and quality of pre-school education in Spain.	Spain	Explore the structural and process quality of pre-school classrooms in the Spanish city of Seville and the perspectives of classroom teachers towards the implementation of a universal preschool programme.	25 four-year-old pre-school classrooms from 15 pre-schools (including public, private and faith-based)	- Teachers working at 25 four year old pre-school classrooms (all but one teacher was female);	- Staff: child ratio; - group size; - facilities and resources; - support staff; - bureaucracy; - curriculum; - in-service training opportunities.

Appendix 7: Details of WC views studies: methodology

Author, date, title	Study design summary	Sample	Data collection methods	Data analysis methods
Blatchford et al. (2001/2002). Relationships between Class Size and Teaching: A Multimethod Analysis of English Infant Schools.	Mixed method	- 151 reception teachers (cohort 2) in 1998; - 130 Year 1 teachers (cohort 1) in 1998; - 130 Year 1 teachers (cohort 2) in 1999; - 153 Year 2 teachers (cohort 1) in 1999.	- Teacher end-of-year reports; - case studies of individual classes; - teacher estimates of time allocation; - systematic classroom observations.	Framework "thematic" analysis: - Coding frame was developed on the basis of an initial analysis of 50 of the 1998 questionnaires and 20 of the 1999 questionnaires. Answers were read through, and categories were devised that captured the most frequent themes. There were 19 categories in all. Categories coded for each teacher were then entered into SPSS.
Sandstrom (2012). The characteristics and quality of pre-school education in Spain.	Mixed method	- 15 ECE coordinators - 25 classroom teachers	- Semi-structured interviews	Framework "thematic" analysis: - All interviews were conducted in Spanish and recorded for later translation. Data analysed using NVivo 9.0 software to identify and code similar themes across participants

Appendix 8: Summary of Quality Appraisal views studies[9]

Author, date, title	SUMMARY OF THE STUDY AND AUTHORS' REPORTS OF FINDINGS	WEIGHT OF EVIDENCE						USE FUL NESS	RELIA BILITY
		SAMPLING PROCE-DURES	RIGOUR OF DATA COLLECTED	RIGOUR OF DATA ANALYSIS	GROUNDING OF FINDINGS IN THE DATA	BREADTH/ DEPTH OF STUDY FINDINGS	ACCOUNT OF PARTICIPANTSP ERSPECTIVES		
Share, M. (2011). *Developing early years professionalism. The evaluation of the Early Learning Initiative's professional development programme for community childcare settings in the Dublin*	ELI is a community-based educational initiative aimed at addressing educational disadvantage through the provision of an integrated programme for children, their parents and families, and educators from early years up to third level. This report examines the implementation of one element of the Early Learning Initiative - Parental Involvement in Children's	A fairly thorough attempt was made to increase rigour in sampling: Sampling procedures were implemente d within a participatory research	A fairly thorough attempt was made to increase rigour in the data collected: Researchers used a number of data collection methods.	A fairly thorough attempt was made to increase rigour in the analysis of the data: Data analysis consisted of a very systematic	The findings of the study are well grounded/suppor ted by the data: Extensive reporting of data extracted by interviews with participants.	Good/fair breadth and depth: Multiple point of views are explored and their analysis provide a rich insight on strength and weakness of the programme	The study privilege the perspectives and experiences of ECEC professionals to a great extent: Central to the participatory methodology was a Research	High	High

[9] The summary of the quality appraisal of impact studies can be found in table 4.2 on p.60.

Docklands.	Learning (PICL) training in community childcare centres in the Docklands.	design.		and justified process.			Reference Group that comprised representatives from the five childcare centres.		
Richter, K. (2012). Teaching competence of preschool teachers in the field of natural science. A quantitative and qualitative study of competence development in the context of an advanced training programme. (Translation	This study evaluates a training programme which trains preschool teachers to encourage and support children's experimentations and explorations in the field of natural science. As a result of the training, professionals had better self-reported outcomes on interest in the topic, self-concept and expertise and methodical skills and revealed higher frequency of conducting experiments with children and encouraging children's' experiments. The effects also persisted 6 months after the training intervention (high dropout). Results confirmed that competence dispositions	A thorough attempt was made to increase rigour in the sampling: The sample is reasonably diverse.	A thorough attempt was made to increase rigour in the data collected: An interview topic guide was used, pilot interview was conducted, and literal transcripts of interviews were collected.	Several steps were taken to increase rigour in the analysis of the data: The analysis method is explained, and codes are well documented The author supports the analysis with	The findings of the study are well grounded/supported by the data:	Good/fair breadth and depth: Findings are adequate and useful. The underlying theoretical construct of competence dispositions and development is explored in good depth and breadth in the interviews. Results address the	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Semi-structured interviews with open-ended questions intended to capture subjective opinions and experience of respondents. The a priori	High	High

from German)	(interest, self-concept, expertise and methodical skills) are correlated.			extensive data extracts which are comprehe nsive and which support interpretat ion. There is however no clear intention to look also for negative cases.		complexity of the topic. However, the relevance of gender might also have been addressed and explored in the study.	deductive coding framework is altered to include categories and themes brought forward by participants. Feedback or discussion of results with respondents is not mentioned.		

Blatchford, P. Et al. (2001/2002). Relationships between Class Size and Teaching: A Multimethod Analysis of English Infant Schools.. *American Educational Research Journal*. 39(1): 101-132. (Linked study)	The study investigated the connections between class size and teaching interactions using a multi-method approach and data from a longitudinal study of more than 10,000 children and their teachers over 3 years. Results show, overall, that in smaller classes, there is more individualized teacher support for learning. The findings of the qualitative part rely on case study observations and semi-structured interviews with teachers and head-teachers.	Several steps were taken to increase rigour in the sampling: The schools in the study drew from a wide range of social backgrounds and were situated in urban, suburban, and rural areas.	A fairly thorough attempt was made to increase rigour in the data collected: There were multiple visits, during 3 years. The researchers spent enough time at the sites with the participants Data collection was comprehensive and enables a rich description of experiences	Several steps were taken to increase the rigour in the analysis of the data: Field workers were trained to do observation. Findings were discussed Analysis of observations was carried out by different people	The findings of the study are well grounded/supported by the data: A large amount of empirical data is presented. The observations from the case studies allow diversity of perspectives to emerge and portrait a rich description of experiences in both large and small classes.	Good/fair breadth and depth: The qualitative observations presented in the article present a thick description of the situation of small-size and large-size classes and their analysis is well elaborated.	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The study provides a meaningful combination of quantitative and qualitative data, in both 'parts' experiences of practitioners are at the forefront.	High	High

			. 4 data collection methods are used						
Cardoso, M. G. (2012) Creating contexts for quality in childcare: playfulness and learning. (Translation from Portuguese).	This study aims to construct educational contexts that encourage the exploration and development of significant children's learning. It is a case study that uses training in context and action research. Key outcomes in terms of quality were: an evolution in the view of children as spectators into participating children abandoning an academic pedagogy. This implied changing practices, the educational environment (space and time), the planning and assessment practices, based in listening to the child, a reconceptualisation of the role of play in early learning	Several steps were taken to increase rigour in the sampling: Apart from the parents, which sampling strategy is not stated, the other participants sampling is well justified and included the whole professional pedagogic team.	A thorough attempt was made to increase rigour in the data collected: The researchers spent several years in the institution and collected data from many sources in a comprehen sive way. Several steps were	Several steps were taken to increase rigour in the analysis of the data: The analysis method is explained although not in a very detailed way. The analysis presents clearly some of	The findings of the study are well grounded/suppor ted by the data: The narratives of the changing process are constantly illustrated by extracts of data from different sources.	Good/fair breadth and depth: The results address the complexity of the processes and illustrate with great depth the issues arising from different sources of data and perspectives. Perspectives are fully explored and linked with a range of individual and contextual	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Although the study focuses more on the professionals' views and practices, it includes also a range of perspectives from parents and children. A balance between the a	High	High

	from something children naturally do (without the involvement of the adults) towards something that gives children the possibility to intervene directly in the every-day pedagogy and augmenting possibilities to invent and finding out about the world. There was a progressive coherence between discourses and practices.		taken to increase the participant confidence in the interviews.	the contradictions found in the process of change between the staff, the directive board, and the researcher.		variables.	priory themes for analysis and the emergent themes is achieved.		
Craveiro, M. C. (2007). Training in context: a case study in early childhood pedagogy. (Translation from Portuguese)	This study tried to clarify the professional development process of a group of preschool teachers, who were in an organizational development work context. The goal is to promote quality education for children. The study showed the importance of the	Several steps were taken to increase the rigour in the sampling: The criteria to select the participants for the interviews	Several steps were taken to increase the rigour in the data collected: The contexts of the interviews	A thorough attempt was made to increase the rigour in the analysis of the data. The study combines several	The findings of the study are well grounded/supported by the data: The study is grounded in several sources of data, which is well presented and the different sources are	Good/fair breadth and depth: A range of issues is covered. The perspectives of participants are fully explored in	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The analysis was both	High	High

	contribution of diversified but congruent approaches and perspectives related to childhood pedagogy. The results also show changes in the team climate: it became more open to share and to collaborate with and to support each other: more team work between teachers and auxiliary staff and changes in teamwork between teachers. Besides that, teachers started to work with written plans based on child observations and they start to collect evidence of children learning by observing their own classroom.	are unclear and dubious. It is possible that the applied manner can lead to a selection of participants that will testify in a more congruent way with the researcher	where carefully selected as to provide a calm environmen t but also a familiar one.	types of data collection and uses triangulati on for the analysis. An external researcher coded the transcripts of the interviews.	clearly identifiable.	terms of breadth. Moreover, the author clearly unveils the complexity of the process of change in quality. The features of the interventions that supported this change are also clearly addressed.	informed by a priori categories and emerging ones. The researcher also gave the teachers some opportunities to share their own knowledge, which gave them the role of expert.		

Jopling, M. Et al. (2013). The Challenges of Evaluation: Assessing Early Talk's Impact on Speech Language and Communication Practice in Children's Centres. *International Journal of Early Years Education*. 21(1): 70-84.	This paper describes the findings of a qualitative evaluation of an early years' intervention, I Can's Early Talk (ET) programme. ET was designed to improve speech, language and communication outcomes for children aged 0-5 by focusing on enhancing practitioners' knowledge and skills. The research focused on children aged 3-4 years and was conducted in 14 Sure Start Children's Centres across England; Findings revealed improvements in practitioners' confidence and practice as a result of participating in the programme.	Several steps were taken to increase rigour in sampling: Long negotiations with LAs. In the end, researchers used their team's network to find centres. As a result, 14 centres composed a sample and were at different stage of implementing ET programme (which allowed to	A fairly thorough attempt was made to increase rigour in the data collected: Researchers used a number of data collection methods to diversify data sources. Views of different stakeholders were collected. The research team was trained in the use of	Several steps were taken to increase rigour in the analysis of the data: Researchers used methods to follow-up and they adopted to changing circumstances. During the data analysis, an analysis day was held for the whole research team	The findings of the study are fairly well grounded/supported by the data: The authors describe different types of evidence: interviews, PCI observations and rating scales. However, the paper does not present the data collected during PCI observation and rating - only findings are presented.	Good/fair breadth and depth: The study answered the research questions and provided information on how the intervention affected centre's practices, practitioners skills and knowledge and their interaction with children	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Views of ECEC professionals were gathered via different data collection methods; their consent was obtained to be filmed; online project database was created where the wider reference group could comment and offer feedback during the research	High	High

	The results also suggest that participating practitioners felt their capacity to understand and reflect on how to support children's speech, language and communication improved, particularly in the children's centres which had been accredited for over six months.	compare the effects of more experiences centres with 'new comers'.)	the observation schedule and rating scales. A high degree of inter-researcher reliability was achieved.	testing out and triangulating themes and gauging whether the team' experiences were consistent with the preliminary findings.			process.		
Sheridan, S. Et al. (2013). Systematic quality-work in preschool . *International Journal of Early Childhood*. 45(1): 123-150.	This article is based on a collaborative study in Iceland, Sweden and Norway of the youngest children in institutional settings, such as preschools. The study is based on the voices of preschool staff who work with very young children.	Several steps were taken to increase rigour in sampling: The regions, preschools, and teachers selected for the study have been stratified to	Several steps were taken to increase rigour in the data collected: The authors were careful to follow the interview guide so	Several steps were taken to increase rigour in the analysis of the data: The authors analysed the data independe	The findings of the study are well grounded/supported by the data: The meaning preschool teachers ascribe to systematic quality work is presented under 3 themes. These three themes are well supported by	Good/fair breadth and depth	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The article builds extensively on practitioners'	High	High

	The results showed the dilemmas and challenges that these teachers experience in their everyday work.	represent, as closely as possible, Swedish preschool teachers.	that the interview situations were as similar as possible for all of the participating teachers. During the interviews, follow-up questions were asked if the answers were unclear.	ntly from one another and made the first categorization of themes.	quotations of the interviews. The quotations are used not only to enrich and give a concrete form to the result, but also to show that the result is grounded in the participants' statements.		perspectives and understandings.		
Peixoto, A. (2007) The physical sciences and laboratory activities in preschool education: diagnosis and evaluation of	This study evaluates the impact of an in-service teacher education programme aiming at deepening teachers' physical science knowledge as well as their competences for using the lab to teach physical sciences.	A thorough attempt was made to increase rigour in the sampling: All teachers	Several steps were taken to increase rigour in the data collected:	Several steps were taken to increase rigour in the analysis of the data: The survey	The findings of the study are fairly well grounded/supported by the data:	Good/fair breadth and depth.	The study privileges the perspectives and experiences of ECEC professionals to a great extent:	High	High

the impact of a training program for early childhood educators. (Translation from Portuguese)	The programme led the participants to implement diverse types of lab activities, with different levels of openness, being most of the activities organized in such a way as to foster children' conceptual and procedural knowledge development. The facilitating role of the teacher educator appeared a crucial factor for the change of teachers' practices. Participants' conceptions about lab activities and their use in science teaching developed: they got closer to the conceptions accepted by the specialists in this area.	from the region were surveyed. In the 2nd study everyone who wanted to participate in the training was invited to take part. The training capacity was 16 teachers. Because more than 20 people volunteered; they applied clear selection criteria.	Several methods for data collection were used. Evaluation was done before the training. Researchers used observations and the teachers used self-evaluation forms to see how the training was applied in practice. Data was thoroughly validated.	results were quantified and clustered. Interview results were documented and validated with experts.	The findings are supported by presentation of raw data and survey analysis.		The consent and feedback of teachers was constantly taken into account.		

Wood, E. Bennett, N. (2000). Changing theories, changing practice: exploring early childhood teachers' professional learning. *Teaching and Teacher Education*. 16(5–6): 635-647.	This article gives insights into how teachers change their theories and practice. The data are drawn from a research study carried out in England which examined nine early childhood teachers' theories of play and their relationship to practice. As an unintended outcome of their close involvement in the data collection and analysis, all of the teachers changed their theories, or practice, or both. The contexts which stimulated these changes and the learning processes which the teachers experienced are described and analysed. The conclusions indicate a need for a theoretical underpinning for teachers' professional development which might also inform the design of teacher education	Several steps were taken to increase rigour in sampling: A broad range of teacher characteristics was sought	Several steps were taken to increase rigour in the data collected: Information on the teachers' classroom practices was acquired through a systematic cycle of data collection. Each teacher's observations and analyses were recorded and transcribed	Several steps were taken to increase rigour in the analysis of the data: The interviews were transcribed and subsequently analyzed independently by two researchers. The resulting interpretation was discussed and verified with the teachers at the second	The findings of the study are fairly well grounded/supported by the data: Two detailed case studies plus quotations from other study participants to support and extend arguments.	Good/fair depth but very little breadth.	The study privileges the perspectives and experiences of ECEC professionals to a great extent.	High	High

	courses.		for analysis.	group meeting.					
Vonta, T. Et al. (2007). Mentoring in the professional development of a teacher and a preschool teacher. (Translation from Slovenian)	This study focuses on the principles of life-long learning as a continuous process, which is supported by the knowledge and skills of using ICT. The goal was to improve the quality of preschool education by qualifying mentors and mentoring teams that support and evaluate preschool teachers' work. The results show the importance of a professional portfolio as a tool for sustaining professional development. The role of the professional mentors is to encourage, observe and provide feedback as well as to advise about possible changes considering the professional	Steps to increase rigour in sampling were not stated.	A thorough attempt was made to increase rigour in the data collected: Data collection was comprehensive, flexible and sensitive enough to provide a complete and rich description of people's perspectives and experiences. Several questionnaires were	A thorough attempt was made to increase rigour in the analysis of the data: Data analysis methods were systematic. Diversity in perspectives was explored.	The findings are well grounded/supported by the data: The data was appropriately analysed and the interpretation directly follows the data (shares of answers to certain questions, the analysis of answers to open-ended questions…).	Good/ fair breadth and depth: A range of issues are covered. Critical reflexion and the evaluation of preschool teachers was considered. The differences in opinions between preschool and elementary school teachers were	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The participants were included in all the steps of the study, their critical evaluation was considered and their needs were identified. The topics of the program were	High	Medium

	work with children.		used.			analysed.	simultaneously adapted during the whole educational process.		
Sandstrom, H. (2012). The characteristics and quality of pre-school education in Spain. *International Journal of Early Years Education*. 20(2): 130-158	This study examined 25 four-year-old pre-school classrooms with high children to teacher ratio from a random sample of 15 schools within a large urban city in southern Spain. The results highlight the importance of a pre-school education for children's development and school readiness, but also emphasise the challenges teachers faced with the new government-subsidised, universal pre-school programme, including increased class sizes and a lack of staff and resources.	A fairly thorough attempt was made to increase rigour in sampling: Sampling frame and selection strategies are accurately described.	A fairly thorough attempt was made to increase rigour in the data collected: They used a stratified random sampling of settings in one geographic area.	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are well grounded/supported by the data: Detailed quotations given that fit purpose. Teachers' rich descriptions provide supporting qualitative evidence that gives explanation to the quantitative findings.	Good/fair breadth and depth: 11 themes are identified to support and explain the findings.	The study privileges the perspectives and experiences of ECEC professionals to a certain extent: The study is a combination of observed measures of settings and views of ECE professionals	High	Medium

Ang, L. (2012). Leading and Managing in the Early Years: A Study of the Impact of a NCSL Programme on Children's Centre Leaders' Perceptions of Leadership and Practice. *Educational Management Administration and Leadership*. 40: 289-304.	This study explored children's centre leaders' perceptions of leadership and the impact of their professional qualification - the National Professional Qualification in Integrated Centre Leadership (NPQICL) - on their professional practice. The study indicates that leadership development programmes such as those embodied in the NPQICL, can have a strong impact on children's centre leaders, their practice and perceptions of leadership (empowering their professional role, reflective leadership style).	A fairly thorough attempt was made to increase rigour in sampling: They used a stratified sample based on two main categories (cohort of participants and geographically spread)	Minimal/few steps were taken to increase rigour of data collection: The ethical approval was formally sought from the research ethics committee of the researcher's institution.	Steps to increase rigour in the analysis of the data were not stated in the article.	The findings of the study are well grounded/supported by the data: The findings presented in the article provided pertinent examples of the perceptions held by children's centre leaders towards their leadership and practice.	Good/fair breadth and depth: Richness and complexity arising from the data has been portrayed and related to existing research.	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The analysis carried out in the findings and discussion sections builds extensively on practitioners' perspectives.	High	Medium
Picchio, et al.(2012). Documentation and analysis	Systematic documentation and analysis of educational practice can be a powerful tool for continuous support	Steps to increase rigour in sampling	Several steps were taken to increase	Several steps were taken to increase	The findings of the study are well grounded/supported by the data:	Good/fair breadth and depth:	The study privileges the perspectives and	High	Medium

of children's experience: an ongoing collegial activity for early childhood professionals. *Early Years*. 32(2): 159-170.	to the professionalism of early childhood education practitioners. This paper discusses data from a three-year action-research initiative carried out by a research agency in collaboration with a network of Italian municipal nido services. The action research aimed at elaborating and implementing documentation procedures that nido practitioners could accomplish continuously and that could form the basis of a collegial reflection on children's experience and the improvement of practices. The analysis of practitioners' discussions about weaknesses and strengths of the new procedures shows how they could be inscribed within the framework of their current professional	were not clearly stated. A cascading procedure, which was inscribed within a framework of in-service training, provided the involvement of all the Pistoia nido practitioners in the action research. However, it is not clear how practitioners were selected into research group.	rigour in the data collected: They used the method of Documentation as tool for data collection. The research group met periodically to elaborate the documentation procedures, which were then proposed, tested and discussed by all the teachers during nido	rigour in analysis of the data: The research group was constantly acknowledging difficulties and provided feedback to teachers. The analytical process was carried out in close consultation with the practitioners involved in the	The data presented fit the interpretations; quotes are dated and identified by alphabetical codes	Findings are discussed in the light of the theoretical frame outlined at the beginning of the paper. The paper grasps the experience and views of the practitioners, impact on educational action and practices and difficulties in practitioners' practices.	experiences of ECEC professionals to a great extent: The paper builds mostly on the view of those practitioners who participated in the development of the research framework and documentation framework. Those practitioners received constant feedback during the research		

	engagement and support their processes of reflexivity.		or inter-nido meetings.	study			process		
Johansson, I. Et al. (2007). Practitioner-oriented research as a tool for professional development. *European Early Childhood Education Research Journal*. 15: 151-166.	The aim of this study was to analyse how a model for practitioner-oriented research can be used as a tool for professional development in the preschool. The focus of interest is the type of knowledge that is formed when researchers and preschool staff cooperate on local projects. The participants consisted of fifteen working-teams from preschools in two Swedish cities, together with three university-based researchers. The results showed that the staff generally had a positive picture of the relevance of	Minimal few steps were taken to increase rigour in sampling: The population was quite diverse. Participation of teachers was based on voluntary basis.	Several steps were taken to increase rigour of data collection: A combinatio n of data collection tools was used. Focus groups were tape recorded and held in a place where participants	Several steps were taken to increase rigour in the analysis of the data: The transcripts of the interviews were thematicall y analysed in a systematic way.	The findings of the study are well grounded/suppor ted by the data: Quotes are extensively presented to illustrate the findings. However, the quotes are not numbered or specified - so it is not clear whether they come from one or from different persons.	Good/fair breadth but little depth: The findings are widely described in terms of impact of practitioner-oriented research on ECEC professional's competences development and improvement. However, there is no discussion on the thematic	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The practitioners participated in elaboration and implementatio n of the research and they were asked about their perceptions and experiences via open-	High	Medium

	research-based knowledge for their developmental work, and increased their ability to use the group for constructive critical reflection on their professional work in preschool.		would feel at ease.			differences of the working group and whether it had any influence.	ended questionnaires (one before and one after the research) and via focus group interviews.		
Leal, R. A. (2011) Educating the citizen from kindergarten: the contribution of early childhood educators' assessment practices in collaboration with the family. (Translation from	This research seeks to understand the complex and dynamic phenomenon of the learning assessment of children in collaboration with the family in Preschool Education (PE) as a mean of improving the development of children's competences. The evaluation reveals an impact on the learning assessment practices at a micro level (decisions made in the activities room) and, to a lesser extent, at a meso level (decisions made within the institution).	Minimal steps were taken to increase rigour in the sampling: The author selected only 1 private kindergarten with which she already worked before. Parents and teachers were selected	A thorough attempt was made to increase rigour in the data collected: The data collection was comprehen sive. In 4 stages, different methods were used with the constant reflection	Minimal steps were taken to increase rigour in the analysis of the data: The authors used triangulati on. There is an extensive explanatio n on how the results were	The findings are fairly well grounded/suppor ted by the data: All the supporting statements, opinions and analysis of the responses is presented in detail.	Good/ fair breadth and depth: The perceptions of the participants are well explored.	The study privileges the perspectives and experiences of ECEC professionals to a great extent: The participants were involved in the research and the data collection was confidential.	High	Medium

Portuguese)	The early childhood educators integrated into their practices a number of assessment strategies, which created an awareness of the importance of focussing on the child's activity and on the competence-development of each child. However, no steps were taken to change practices, and the children's parents continued to be passive subjects.	based on voluntary basis.	from the participants and experts	interprete d after each data collection phase. However, it is not clear how the synthesis was done.					
Peeters, J. Vandenbroeck , M. (2011). Childcare practitioners and the process of professionaliz ation. In: Miller Cable *Professionaliz ation and Management*	There is large degree of consensus that higher staff qualifications are correlated with higher quality in early childhood provision and that reflection is the most important part of professionalism. However, the concepts of the 'reflective practitioner' and the 'reflexive	Steps to increase rigour in sampling were not stated.	Several steps were taken to increase rigour in the data collected: The researchers used multiple	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are fairly well grounded/suppor ted by the data: Participants' interview excerpts are extensively reported and multiple	Good/fair breadth and depth: Participants' perspectives were explored and gave account of complexity and multiple points of	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Interview excerpts are	High	Medium

in the Early Years. London: Sage, pages 62-74.	practitioner', although frequently mentioned in the literature, remain rather underdeveloped and the apparent consensus on the need for reflection may very well disguise a lack of consensus on what it actually means. In this article analysis of narratives of professionals during 30 years of action research show how professionals who engage with pedagogic guidance can become actors of change and develop new pedagogic practices.		sources for data collection.		perspectives - including dissonant meanings - are explored. Quotes are identified with specification of professional role/date and this allows to identify whether quotes are taken from the same person.	view. Through the analysis of practitioners' perspectives data were fairly elaborated for interpretation by referring to existing literature	extensively reported and multiple perspectives - including dissonant meanings - are explored. The discussed themes arouse out of participatory action-research projects carried out collaboratively by researchers and practitioners		
Lino, D. (2005). From academic training to training in context: an innovative	This study aims to understand the impact of in-service teacher training in preschool teacher's professional development and in the quality of early childhood practices.	Several steps were taken to increase rigour in the sampling:	Several steps were taken to increase rigour in the data collected:	Minimal steps were taken to increase rigour in the analysis of the data:	The findings of the study are well grounded/supported by the data: Different types of data was	Good/Fair breadth, but little depth: The study is fairly well designed by	The study privileges the perspectives and experiences of ECEC professionals to a certain	High	Medium

path to the reconstruction of early childhood pedagogy. (Translation from Portuguese)	The results highlight the relationship between quality practices in early childhood education and children's learning. Furthermore, the data show that pedagogy apprenticeship is a long running process which requires the learning of complex nature skills. The study also highlights the interaction between pre-school teachers training, professional development and children's learning.	The criteria for selection were applied and justified. However, there were difficulties in contacting students who changed their address. Moreover, there is no information about how and why they chose the teachers when the total number of each group was completed.	The interviews with the teachers were carefully planned with them. The data collection methods were comprehensive enough to answer the research questions. However, 1 group received more support from and time with the researcher,	The interviews were turned back to the teachers for confirmation or for introducing some changes in their own discourse.	presented to describe the quality of teacher's practice. Children's learning was also documented by descriptive records on the target-child observation record and evaluated in terms of child involvement. Data from interviews are clearly identified showing the scope and variety of the data used to support findings.	using a variety of data at the same time, which is clearly focused on specific questions. Unfortunately, the study does not have data on the teaching quality and children's involvement before the specialised in-service course was delivered.	extent: The teachers' interviews were semi-structured which enabled them to express their own views in an open way. However, unequal opportunities have been given to the two groups to express their opinions, as the teachers familiarity and time with the researcher is considerably different between the two groups.		

			which may cause a little bias in data collection.						
Menmuir, J. Christie, D. (1999). Encouraging professional reflection in early education.. *International Journal of Early Years Education*. 7(1): 61-75.	This article examines the use of the Repertory Grid technique derived from personal construct theory as a tool to aid the reflection of teachers and other professional working in Early Education. The main focus of the article is a study of the constructs used to describe children, elicited at the start and again at the end of a module 'Children's Development and Learning', which formed part of a continuing professional development postgraduate award in Early Education. The approach was evaluated by quantitative and qualitative analysis of the	Minimal/few steps were taken to increase rigour in sampling: Participants are coming from different settings and apparently with different length of experience; however, no information is provided on how they were recruited and what	Minimal/few steps were taken to increase rigour in the data collected: Researchers used different methods for data collection. However, in the research process only 7 participants (out of 13) managed to	Several steps were taken to increase rigour in the analysis of the data: The analysis is well described and the example from one participants' thinking development is presented as a case study.	The findings of the study are fairly well grounded/supported by the data: Only a case study of one participant is presented to demonstrate the development/changes in practitioners' thinking. For the rest the table with variance is given. The findings on the usefulness of the exercise and changes in the views is	Good/fair breadth and depth: The article provides a profound description of the construct in practitioners' thinking that emerged during the exercise and the usefulness of the exercise. It acknowledges the limitations made.	The study privileges the perspectives and experiences of ECEC professionals to a certain extent: The researchers provided guidance on how to fill-in the grid, and one informal discussion was held afterwards to assess their experience.	Medium	Medium

	participants' grids using the Rep Grid 2 package and by evaluation of the end of module interviews.	their socio-demographic characteristic are.	finish the module till the end	The overall methodology of filling-in the grid is presented in the Appendix.	supported by interviews (with are marked based on the numbers of the participants).	To avoid being too superficial, the study provides in depth analysis of the intervention's process undergone by one of the participants.	However, there is no information on how they were assisted in the beginning of the process and whether they were involved into the design of the research process.		
McMillan, G. Et al. (2012). Changing Mindsets: The Benefits of Implementing a Professional Development Model in Early Childhood Settings in Ireland. *Professional Development in Education*.	This paper examines the effectiveness of a professional development model (PDM) devised as part of a research project carried out to support early childhood professionals in Ireland in enhancing their pedagogy. The PDM was constructed on a socio-cultural theoretical framework whereby Vygotsky's zone of proximal	Steps to increase rigour in sampling were not stated.	Several steps were taken to increase rigour in the data collected: Multiple sources of data were collected in order to triangulate	Minimal/few steps were taken to increase rigour in the analysis of the data: The methods used are appropriate to	The findings of the study are well grounded/supported by the data: The findings rely heavily on the reporting of practitioners' excerpts from interviews and reflective diaries.	Good/Fair breadth, but little depth:	The study privileges the perspectives and experiences of ECEC professionals to a certain extent: The discussion of findings draws extensively on	Medium	Medium

38(3): 395-410.	development was applied. Overall the findings suggest that implementation of the PDM had benefits at personal and professional development levels and also at early years setting level. However, benefits to the early years professional community were limited and the paper makes recommendations regarding the potential role of the PDM in the construction of a strong early years professional community of practice in Ireland.		findings on the impact of the CPD model proposed on practitioners' perceptions and practices as well as on children's learning experiences.	analyse the empirical materials collected.			empirical materials that make explicit references to practitioners' views and perceptions. However practitioners have not been involved in the process of data analysis (feeding in the process of data interpretation).		
Rönnerman, K. (2008). Conscious quality work. Follow up of course Q in preschool and the implications for preschool teachers in	The purpose of this study was to investigate and follow up the possible implications for practice of pre-school practitioner's participation in an action research course. The aim was to search for critical elements that may be crucial for courses such as this one when it comes to impact on development and	Several steps were taken to increase rigour in the sampling: The web based questionnair	Several steps were taken to increase rigour in the data collected: The respondent	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are limited grounded/supported by the data: Although it is not clearly stated and although the quotes are not	Good/fair breadth and depth	The study privileges the perspectives and experiences of ECEC professionals to a great extent:	Medium	Medium

their daily practice. (Translation from Swedish)	thus on the quality of the preschools. The study highlights how preschool teacher's perceptions of their own profession changed and how they felt they had changed their ways of working with children. The professional growth of pre-school teachers participating in the project led to better quality of teaching.	es were sent in the beginning of the course. Sampling strategy was appropriate to the questions posed.	s were reminded twice to fill in the questionnaire.		numbered, the quotes presented seem to support the findings.		Pre-school teachers had wide possibilities to express their opinions on the subject and to discuss them during the practical phase of the project		
Blenkin, G. Hutchin, V. (1998). Action research, child observations and professional development: some evidence from a research	This article outlines some findings from the early childhood education (action) research project, '*Principles into Practice (PIP): Improving the Quality of Children's Early.* The article highlights a number of ways in which the case study evidence of	Steps to increase rigour in sampling were not stated in the article.	Several steps were taken to increase rigour in the data collected:	Minimal few steps were taken to increase rigour in the analysis of the data: The case studies	The findings of the study are fairly well grounded/supported by the data:	Good/fair depth but little breadth.	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Case studies of	Medium	Medium

project..	trained and untrained early years staff is revealing a crucial interdependence. The interdependence is between the action research process itself, the nature and quality of child observations, and the successful professional development of individual practitioners. The article concludes with evidence from the PiP project which shows that these interdependent processes can only take place when change and development is supported from within the institution and/or from outside.		Each 'action researcher' was supported at the beginning by a member of the project team. Evidence such as observations in writing or on tape were recorded as well as field notes and reflections on meetings and discussions.	show how child observations have been used to illuminate different aspects of practice and how this affected practitioners' professional development.	The study presents accurate description of how action plans developed and were implemented, building extensively on data collected by practitioners and analysed together with the research associates.		practitioners are extensively presented		
Hayes, N. Et al. (2013).	CDI is one of three sites that constitute the Prevention	Steps to increase	Several steps were	Steps to increase	The grounding of the data is quite	Good/fair breadth but	The study privileges the	Medium	Medium

Evaluation of the Early Years Programme: Child Development Initiative (Ireland). Dublin: CDI.	and Early Intervention Programme (PEIP) that was set up with the objective of testing innovative ways of delivering services and early interventions for children and young people, including the wider family and community settings. The study combines a quantitative outcome evaluation with a qualitative process evaluation of the programme. In the qualitative part practitioner's perspectives on structural and organisational components of the programme were analysed.	rigour in sampling were not clearly stated: Despite the fact that very rigorous procedures were adopted for the quantitative part, it is not clear how early years staff were selected for focus groups.	taken to increase rigour of data collection: Data were collected from a triangulation of methodologies including Early Years practitioner focus groups and independent observation of service practice.	rigour in the analysis of the data were not stated in the article: Only thematic analysis is mentioned.	limited: Only a few quotes are reported from focus groups, the findings section is mainly descriptive.	little depth: Process research questions are outlined according to the categories of utilisation, fidelity and organisation. Information is presented in response to these questions that highlights key positive and negative aspects of the process of programme implementation.	perspectives and experiences of ECEC professionals to a certain extent: Early years staff took part in focus groups, but it is not clear how many and also, the main focus of study was on children and parents.		
Asplund Carlsson, M.	The aim of this study was to analyse teachers' changing ways of talking about	Several steps were taken to	Steps to increase rigour in the	Steps to increase rigour in	The findings of the study are fairly well	Good/ fair breadth and	The study privileges the perspectives	Medium	Medium

Et al. (2008). From doing to learning and understanding. A study of teacher's learning in the field of aesthetics.	children's aesthetic learning in the early years as a result of a research and development project. The teachers expressed a view of having become more aware of the concept of learning objects in the aesthetics, of their own role as teachers in directing children's attention and to listen to children. The teachers thus gained a new way of talking about themselves as teachers and about children's learning within music, dance and poetry.	increase rigour in the sampling: The sampling strategy was appropriate to the questions posed.	data collected were not stated.	the analysis of the data were not stated.	grounded/supported by the data: Although the quotes are not numbered, it is clear that they support the findings.	depth	and experiences of ECEC professionals to a great extent: The questions were open ended and follow up questions conducted in a dialogical way.		
Aubrey, C. Et al. (2012). Enhancing Thinking Skills in Early Childhood. *International Journal of*	This study carried out an evaluation of two thinking-skills programmes (Let's Think! and Key to Learning). The article describes what typically happened when	Minimal few steps were taken to increase rigour in the sampling.	Steps to increase rigour in the data collected were not stated.	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are fairly well grounded/supported by the data: A summary of	Good/fair depth but very little breadth.	The study privileges the perspectives and experiences of ECEC professionals to a certain	Medium	Low

Early Years Education. 20(4): 332-348.	such programmes were delivered in the context of the real world of national and local policy influences and in schools and classrooms when programmes are purchased, staff are trained and whole-school accommodation has to take place. All settings reported changes in teachers' practices and an impact on the whole school.				fieldwork observations is presented in the findings sections.		extent: A balance between open-ended and close-ended responses to interviews was reported. Participants were not involved in designing the research.		
Bleach, J. (2013). Using action research to support quality early years practice. *European Early Childhood*	This article examines the effectiveness of action research as a continuous professional development (CPD) tool. Learning communities, reflective practice and professional dialogue were key elements.	Steps to increase rigour in sampling were not stated.	Several steps were taken to increase rigour of data collected: Site visits	Steps to increase rigour in the analysis of the data were not stated.	The grounding of the data is quite limited: Summary figures	Good/fair breadth but little depth: The	The study privileges the perspectives and experiences of ECEC professionals to a certain extent.	Medium	Low

Education Research Journal. 21(3): 370-379.	Participants found the programme easy to understand and useful to their practice. The combination of purposeful peer interaction and learning through action helped improve the quality of teaching and learning in the settings. Action research supported the implementation of change by helping participants to develop the skills needed, both individually and collectively, to deliver outcomes they really cared about.		were frequently carried out and characterised by a continuous 'follow-up'. Different methods for data collection were used		for responses and illustrative quotes are noted, but only very little data is presented. There are numerous descriptions of changes, but they are not very well supported by empirical data.	perspectives of few practitioners are presented in support to key findings. The findings however mainly rely on descriptions of changes and effects at different levels. Findings are scarcely elaborated. A range of issues are covered, but with little depth.	All respondents were practitioners who took part in the action-research process, but only a few quotations are reported in order to support the findings/conclusions.		
Potter, C. Hodgson, S. (2007). Nursery nurses reflect: Sure Start training to	This paper describes a reflective training approach designed to enhance interactions between adults and children in two early years settings.	Steps to increase rigour in sampling were not stated.	Minimal steps were taken to increase rigour of the data	Steps to increase rigour in the analysis of the data were not	The findings of the study are fairly well grounded/supported by the data:	Good/fair depth but very little breadth: Only five	The study privileges the perspectives and experiences of ECEC professionals	Medium	Low

enhance adult child interaction.. *Reflective Practice*. 8(4): 497-509.	Within the context of a local Sure Start programme, a 12-week course to five nursery nurses was delivered, which provided extensive opportunities for reflection in and on action through the use of both video clips and work-based support sessions. The training succeeded in facilitating both increasing reflection in this key area of early years activity, which in turn resulted in some major changes in practice.		collected: More than one method of data collection was used.	stated.	Use of quotes to support findings.	respondents from two early years settings were involved in the study.	to a great extent: Practitioners are sole source of data.		
Rönnerman, K. (2003). Action research: educational tools and the improvement	In this article an in-service training project is presented and discussed. The project was, over a period of two-and-a-half	Steps to increase rigour in sampling were not stated.	Minimal/few steps were taken to increase rigour of the data collected:	Steps to increase rigour in the analysis of the data were not	The findings of the study are fairly well grounded/supported by the data:	Good/fair depth but very little breadth: Findings from	The study privileges the perspectives and experiences of ECEC professionals	Medium	Low

of practice. *Educational Action Research*. 11(1): 9-21.	years, carried out with pre-school work teams in an area of Goteborg. Results show that the educational tools were important for practitioners if they were to continue improvement at school. A key issue for the teachers seems to be how the educational tools and the actions are related to everyday practice.		Data from 3 sources included: interviews, diaries, survey.	stated.	Quotations are used to support points made from more than one person, quotations illustrate points well.	only a few preschools	to a great extent: Practitioners are sole source of data.		
Oliveira-Formosinho, J., Araújo, S. (2011). Early education for diversity: starting from birth. *European Early Childhood Education Research Journal*. 19(2):	This article analyses the topic of early diversity education, considering intervention and research that has been developed by the Childhood Association. The authors aim to identify the main characteristics of this pedagogical approach that are most effective. The interventions were	Steps to increase rigour in sampling were not stated.	Steps to increase rigour in the data collected were not stated.	Several steps were taken to increase rigour in the analysis of the data: The content analysis	The grounding of the data is quite limited: Illustrative quotes are not used.	Good/fair depth but very little breadth: There is only data presented from portfolios and interviews with six	The study privileges the perspectives and experiences of ECEC professionals to a great extent: Practitioners are the only	Medium	Low

223-235.	carried out within a cooperative praxiological research approach. The presented case study aimed at researching programme development and outcomes. The results highlight the important role of context-based teacher education processes and, within these, the central role of pedagogical dimensions of families, nature and culture as mediators in the emergence of sensitivity and respect for all forms of difference.			was conducted through the Kvale system that allows the use of formally establishe d categories and proceeds to a process of condensati on.		practitioners. It is not mentioned how many settings are represented. The article does not give sufficient information about problems with the method.	data source for the study.		
Vujičić, L. (2008). Research and Improvement of One's own Practice – Way to Development	This paper reports the results of a study performed in the first year of a three year research project '*Changing the culture of educational institutions*'.	Steps to increase rigour in sampling were not stated.	Several steps were taken to increase rigour of the data collected:	Steps to increase rigour in the analysis of the data were not	The findings of the study are fairly well grounded/suppor ted by the data: Detailed account	Good/fair depth but very little breadth:	The study privileges the perspectives and experiences of ECEC professionals to a great	Medium	Low

of Teachers'/pre school teachers' Practical Competence.. In: Irē na Žogla; *Teacher of the 21st century: Quality Education for Quality Teaching.* Riga: University of Latvia Press, pages 184-194.	The work was carried out with emphases on preschool teachers' training for the process of research and improvement of their own practice by creating a stimulating environment of an educational institution which is attended by children ranging from one to six/seven years of age.		They used multiple tools for data collection.	stated: Analysis is only mentioned in relation to shared analysis and discussion	of each of the six meetings, with quotations.		extent: The article builds extensively on practitioners' perspectives and understandings.		
SQW (2012). *Evaluation of the 3,4,5 Learning Years Services youngballymun (Ireland)*. Dublin: youngballymu	The 3,4,5 Lewarning Years Service aims to improve holistic developmental and learning outcomes for children in early childhood care and education (ECCE) settings in Ballymun by increasing the quality of service provision through staff professional	Steps to increase rigour in sampling were not stated. It is only stated that	Steps to increase rigour in the data collected were not stated.	Steps to increase rigour in the analysis of the data were not stated.	The grounding of the data is quite limited: There is not much 'data' presented. The whole report is more descriptive: not	Good/fair breadth but very little depth: It is not easy to state to what extent the data has	The study privileges the perspectives and experiences of ECEC professionals to a certain extent:	Medium	Low

n.	development and the provision of mentoring and coaching support to enhance practice. The impact has been particularly evident in terms of staff development, marked changes in practice and in terms of perceived benefits for children.	all 8 preschool settings that have engaged with the Service agreed to participate.		.	many quotations, nor field notes of the observations etc.	been transformed/ analysed. However the report covers a broad description of the changes, difficulties and challenges that the implementation brought about.	The research approach focused on understanding perceptions about the extent to which learning outcomes for children are improving as a result of engagement in HighScope and Síolta.		
Van Keulen, A. (2010). The Early Childhood Educator in a Critical Learning Community: Towards Sustainable Change. *Contemporary*	The action research project Sustainable Change in a Critical Learning Community was conducted in the Netherlands to improve quality in early childhood by enhancement of critical reflection at all levels in early childhood organisations.	Steps to increase rigour in sampling were not stated.	Steps to increase rigour in the data collected were not stated.	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are fairly well grounded/supported by the data: Excerpts from participants' interviews and reflection diaries	Limited breadth or depth: A limited range of issues are covered and variations of meanings	The study privileges the perspectives and experiences of ECEC professionals to a great extent:	Medium	Low

Issues in Early Childhood. 11(1): 106-112.	This action research project was conducted in cooperation with four childcare-providing organisations. The article aims to answer questions and worries in childcare organisations in the Netherlands and to fill a gap in the professionalization of individuals and teams.				were quoted extensively. References were made to the participant's first name of each quote; two quotes came from the same person.	arising out of practitioners' perspective are only partially explored in the discussion of findings.	The professional learning methods used in the action training research were co-constructed and developed with participants whose views were extensively accounted for in the results section.		
Peeters, J. (1993). Quality improvement in childcare centres, with the support of the Bernard Van Leer Foundation.	This article explores the evolution of the pedagogical quality of childcare in Flanders between '79 and '93. Different action research projects were set up and accompanied by training, supervision and mentoring.	Steps to increase rigour in sampling were not stated.	Steps to increase rigour in the data collected were not stated.	Steps to increase rigour in the analysis of the data were not stated.	The findings of the study are not supported by the data: There is not much data presented. The article is very descriptive because it is a summary of 13	Good/ fair breadth but little depth: A broad range of issues are covered (10 aspects of quality + quality	The study privileges the perspectives and experiences of ECEC professionals to a certain extent: The different	Medium: The article explores 13 years of action research by presentin g	Low: There is almost no informatio n about the sampling, data collection, data

	The author states that through supplementary training and courses, change can be effected in the area of furnishing, play materials, stimulation of self-reliance and democratic functioning within the institution. To achieve a coherent pedagogical vision, the author states that an extensive period of guidance within the institution is required.				years of action research.	assurance). Also the article summarizes the effects of 13 years of action research, training, supervision and the construction of training materials.	studies and projects all started with an inventory of the perspectives of professionals, next to the made observations. Unfortunately, the article doesn't provide a lot of quotes.	different projects that have been effective in supporting the Flemish child care sector at the end of the '80.	analysis.