

NOTAT

A SYSTEMATIC REVIEW (SR) OF THE EFFECTIVE CONTINUING PROFESSIONAL DEVELOPMENT (CPD) TRAINING OF WELFARE PROFESSIONALS

CAROLE TORGERSON
CHANTAL NIELSEN
LOUISE GASCOINE
TRINE FILGES
IAN J. MOORE
BJØRN NIELSEN

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Afdelingsleder: Lisbeth Pedersen
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SFI – Det Nationale Forskningscenter for Velfærd
Herluf Trolles Gade 11
1052 København K
Tlf. 33 48 08 00
sfi@sfi.dk
www.sfi.dk

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INTRODUCTION AND BACKGROUND

The quality of the professional development of education and welfare professionals working with children and young people (for example, pre-school teachers or ‘pedagogues’, school teachers, teaching assistants, social workers, psychologists, police officers etc.) is of key importance to policy makers and practitioners in these fields. The general wellbeing of a country’s citizens and the provision of better opportunities in terms of educational and social welfare outcomes (for example, participation in higher education and reduction of anti-social behaviour) have been linked to the quality of teaching and, by implication, the quality of continuing professional development (CPD). Conversely, a potential barrier to achieving these education and welfare aspirations is the variable quality of the professional training delivered to the educational and/or welfare practitioners, which could mean that the education and training of these groups of professionals may, sometimes, be less than optimal.

In order to inform education and welfare professions – policy makers and practitioners – about the nature and effectiveness of a diversity of approaches to continuing professional development, a systematic review of the international literature will be undertaken. Professional development of these groups of professionals could include delivery strategies such as: focused supervision; feedback; team work or other kinds of training/ CPD approaches that are specifically focused on core teaching skills such as language and literacy professional development.

The review will systematically search for, locate, quality appraise and synthesise all the available effectiveness studies which evaluate relevant interventions using rigorous designs. By ‘rigorous designs’ we refer to those research designs that can establish a causal link between continuing professional development and outcomes for professionals themselves, children and young people. Therefore, we will include: systematic review (SR) and meta-analytic designs, ‘true’ experiments (randomised controlled trials or RCTs), quasi-experiments (with baseline equivalence as demonstrated by pre-tests in the outcomes of interest but excluding studies using an instrumental variable approach), including studies using regression discontinuity design. We will search substantively for studies in the fields of education, social welfare and crime and justice.

An initial scoping search on one database was undertaken by LG, using the following search strategy:

TI (teacher OR social worker OR police OR psychologist) AND TI (professional development OR continuing professional development OR CPD OR in service training OR professional learning OR teacher learning OR training) AND AB (experiment* OR quasi experiment* OR QED OR control OR allocat* OR randomi#ed controlled trial OR RCT OR regression discontinuity OR RDD)

This scoping search produced 470 potentially relevant 'hits', which, after screening using preliminary inclusion criteria, indicated that a range of potentially relevant studies, mainly in the field of education, but also in other areas of social welfare and policing (see *Appendix B* where we include selected examples retrieved through rapid screening) is available to be systematically assembled. We are also aware of a recently published meta-analysis in the specific area of professional development in professionals working with children's early language and literacy development (Markussen-Brown et al, 2017). This meta-analysis will form part of the basis of our electronic and citation searching in the field of education. Note that our search will cover the entire field of education and will not be limited to studies on language and literacy development. Similarly, the first author has completed a SR in the field of professional development of dental practitioners (Firmstone et al, 2013) and other meta-analyses may have been published in the fields of social welfare and crime and justice. We will search for relevant SRs and meta-analyses at the beginning as part of our search strategy.

The review will be completed using systematic review design and explicit methods that are open to scrutiny (Torgerson, 2003), as this will minimise bias and increase confidence in the results. The project is funded by TrygFonden and SFI – The Danish National Centre for Social Research.

REVIEW QUESTIONS

The research questions are:

- What are the effects of continuing professional development approaches for welfare practitioners on: educational and social outcomes for children and young people; and on outcomes for practitioners
- What empirical evidence is there on the external validity of specific PD-approaches across cultures, across professions/service-deliverer types, across organizations, across service-receiver types, etc.

DEFINITIONS

For the purpose of this review, we have adopted the following definitions (inspired by Buyesse et al., 2009):

Continuing professional development (CPD):

- Continuing professional development (CPD) encompasses facilitated learning opportunities for education and welfare professionals that have completed their ordinary (basic) training at an (higher) education institute relevant for their professional degree. This (previous) degree can be at varying ISECD-levels (e.g. diploma, BA, MSc, PhD).
- CPD includes all types of facilitated learning opportunities. Some types of CPD will be shorter term, informal, situated in practice and will not lead to credits, diplomas or degrees. Other types of CPD will be longer term, involve formal coursework, and take place at teachers' colleges or universities, and will lead to credits, diplomas or degrees.
- The aim of CPD should be to enhance the professionals' knowledge and skills in ways that are relevant for application in practice, i.e. to serve the ultimate beneficiaries of the intervention, i.e. the children and young people with / for whom the education and welfare professionals work.
- CPD can be delivered by public or private professional development and professional training entities.

CPD can be delivered in many more or less formal ways, including coaching, mentoring, consultations and established communities or teams of practice. In such cases, the CPD must have explicitly formulated content and goals. I.e. (informal) allocation of a mentor for the purpose of general collegial support is not included in this definition of CPD.

Education and welfare professionals:

- Education and welfare professionals are employees working directly or indirectly with and for children and young people with the explicit purpose of enhancing their cognitive and non-cognitive development.
- This includes, but it not limited to, education and welfare employees working towards these goals in settings such as nurseries, day care and other child care institutions, pre-schools, and schools at different levels.
- Education and welfare professionals can be either publically or privately employed, they receive salary for their work, which may be full-time or part-time.
- Education and welfare professionals have completed ordinary (basic) training at an (higher) education institute relevant for their professional degree. This degree can be at varying ISECD-levels (e.g. diploma, BA, MSc, PhD).
- Education and welfare professionals are recipients of the continuing professional development (CPD) activities and interventions that are being evaluated.
- Examples of education and welfare professionals include teachers, teacher assistants, pre-school teachers (pedagogues), care providers, social workers, paraprofessionals, psychologists, police officers, family support providers, disability specialists, inclusion specialists.
- The roles of education and welfare professionals include planning, developing, delivering and evaluating learning and development opportunities for children and young people.

DESIGN AND METHODS

The design of the review is a full systematic review (with mapping and in-depth review stages); the design and methods of the review are informed by the Campbell Collaboration policy briefs (see <http://www.campbellcollaboration.org/>); ‘Systematic reviews: CRD’s guidance for undertaking reviews in health care’ (see <http://www.york.ac.uk/inst/crd>); the ‘Cochrane Collaboration Handbook’ (see <http://www.cochrane-handbook.org/>); the (1994) *Handbook of Research Synthesis* (eds.) Cooper, H, Hedges, L. and Torgerson, C. (2003) *Systematic Reviews*. London: Continuum. The reporting of each stage of the systematic review process will be guided by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) statement (Moher, Liberati, Tetzlaff, & Altman, 2009) to ensure transparency.

Studies that can adequately address the primary research question (which is an effectiveness question) are high-quality evaluations of continuing professional development interventions to improve educational and social outcomes for children and young people and professional practice outcomes for practitioners using experimental designs: randomised controlled trials, quasi-randomised trials, and quasi-experiments. We will only include study designs that employ a treatment-control or a treatment-comparison group design. A control group is defined as a non-treatment condition, while a comparison group receives an alternative treatment. Research using single group pre-post comparisons will not be included. This is because, in order to establish causality (i.e., to be able to state that a specific professional development intervention *causes* an improvement in the outcomes stated above) study designs which can adequately control for all other known and unknown variables that could affect outcome are required (Cook and Campbell, 1979; Shadish et al., 2002):

1. 1. Randomised and quasi-randomised controlled trials (allocated at either the individual level or cluster level e.g. class/school/social worker/geographical area etc.).
2. 2. Quasi-experimental studies (including regression discontinuity design, but excluding studies using an instrumental variable approach – see Appendix A for our rationale for excluding studies of these designs). We will also only include studies using QEDs which demonstrate baseline equivalence. A further requirement is that they are able to identify an intervention effect. Studies where, for example the treatment is given to teachers in one school only and the comparison group is teachers at another school (or more schools for that matter) cannot separate the treatment effect from the school effect. Even within schools, organisation of teachers in teacher teams may mean that randomisation would have to be at the teacher team level to be able to

avoid a situation of not being able to separate teacher-level treatment effect from teacher-team effect.

The review will focus on research evidence from academic journals and other published research from the last 20 years (as this provides the most up-to-date evidence for policy makers, practitioners and funders on effective practices, strategies and interventions). In order to limit the possibility of publication bias, research from the difficult-to-locate ‘grey’ literature will be searched for and included. Our approach to the search for ‘grey’ literature is described in a separate section below.

Studies in which at least one of the groups received a CPD intervention compared to either standard practice (‘business-as-usual’) or an alternative CPD intervention will be included.

INCLUSION CRITERIA

TABEL 3.1

Inclusion criteria.

INCLUDED	EXCLUDED
Date: 1997 to present (last 20 years)	Date: Pre 1997
Publication status: Published or unpublished but in the public domain	
Nature of research: Empirical research or review of empirical research	Nature of research: Non-empirical research or review of non-empirical research
Study design: RCT; quasi-experiment (with baseline equivalence), including RDD	Study design: Study using IV approach; non experimental study designs (i.e., studies without a control or comparison group),
Topic: Education; social welfare; crime and justice	Topic: Not education; social welfare; crime and justice
Participants: Welfare professional (pre-school teacher, ‘pedagogue’, school teacher, teaching assistant, social worker, psychologist, police officer)	Participants: Not welfare professionals (e.g., volunteers)
Participants: Target group (children and young people between the ages of 0 – 18 years)	Participants: Aged 19 years and over (adults)
Intervention: Intervention in continuing professional development (CPD) in the three topic areas. CPD includes, but is not restricted to: focused supervision; feedback; team work or other kinds of training/PD approaches; literacy and language teaching skills, problem solving teaching skills, socio-emotional development skills, and other CPD content	Intervention: Does not have a CPD component; initial training intervention/PD (e.g. initial teacher training)
Outcomes: Primary: Educational, social welfare and crime and justice outcomes for children and young people; Secondary: any intermediate outcomes on children and young people such as at risk behaviours; family outcomes; any outcomes for practitioners that are focused on improving any aspect of professional practice;	Outcomes that are not related to education, social welfare and crime and justice. Practitioner outcomes that are not focused on improving professional practice, e.g., higher job satisfaction

OTHER REVIEWS AND META-ANALYSES

Systematic reviews, meta-analyses and narrative reviews will be addressed in our review to the extent that they cover at least part of review questions that this review aims at answering. We do not expect there to be directly comparable reviews and meta-analyses in the literature and hence the main purpose of addressing them is to juxtapose the findings of our review with the findings of other similar reviews and meta-analyses. We will *not* conduct an explicit quality assessment of these other reviews and meta-analyses since that would lie beyond the scope of this project.

Identification of relevant systematic-reviews and meta-analyses will be integrated in the general search and citation strategy.

ELECTRONIC SEARCHING

We will conduct initial scoping searches in key databases (e.g. ERIC, PsycINFO, SocIndex, Web of Knowledge). We will then develop search strategies in an iterative process and, once finalized, conduct all the electronic searches in the following databases:

- ERIC (searched through EBSCO-host)
- PsycINFO (searched through EBSCO-host)
- SocIndex (searched through EBSCO-host)
- Academic Search Premier (searched through EBSCO-host)
- Teacher Reference Center (searched through EBSCO-host)
- Web of Knowledge (Social Science Citation Index & Science Citation Index)
- ASSIA (searched through ProQuest)

The following national research portals will be searched:

- Forskningsdatabasen (Danish National Research Database)
- SwePub (Academic content from Swedish universities)
- Cristin (Current Research Information System in Norway)
- NORA (Norwegian Open Research Archive)

BN will conduct all of the electronic searches which will be combined into a master database on a software database specifically designed for processing studies in a SR – EPPI Reviewer.

CITATION SEARCHING

Due to the time restraints of the review-process, we will prioritize citation-tracking of the most relevant identified studies. In general, the citation-tracking will be retrospective and prospective. This means, that we will search the bibliography of the relevant studies as well as using Web of Science and Google Scholar to identify the studies that have cited the relevant studies post-publication.

SCREENING AT 1ST AND 2ND STAGES

Once de-duplicated, a random sample of studies will be independently triple screened at first stage (titles and abstracts only) by the three reviewers using the inclusion/exclusion criteria (see above) (CT, LG and CN) as a quality assurance exercise. The database will then be split into equal thirds and each third will be double screened by two reviewers: one third (CT and CN) two thirds (CT and LG). Any disagreements will be resolved through discussion with arbitration by a third reviewer. If necessary, a fourth reviewer can provide confirmation of inclusion/exclusion (TF). Any potentially relevant studies will be located and retrieved. Once retrieved all full papers will be screened at second stage in the same process as outlined above.

GREY LITERATURE SEARCH STRATEGY

In order to identify relevant grey literature for the review (reports, academic theses, working papers etc.) different strategies will be utilized. Identification of grey literature is available through the searches in the bibliographical databases such as PsycINFO, ERIC and Social Care Online. We will search specific targeted relevant online repositories such as Clearinghouses

() and governmental/educational sites from a range of countries; Denmark, Norway, Sweden, Great Britain and USA. Furthermore, citation-tracking of relevant publications (both grey and published) will be performed in Google Scholar, from which further grey literature can be identified. Systematic searches on Google Scholar after grey literature will also be developed.

MAPPING: DATA EXTRACTION AND QUALITY APPRAISAL; SYNTHESIS

At the mapping stage of the SR, all included studies will be double data extracted and a bespoke data extraction tool will be devised for this purpose. Key, basic information about participants, settings, intervention, control or comparison conditions, outcomes and results (as reported by authors) will be extracted and tabulated. A number of quality items will also be extracted. A minimal model for quality appraisal will be developed which will include design, allocation sequence method and attrition.

We will describe the results in tables and narratively, focusing on interventions targeting specific groups of professionals and outcomes targeting both the professionals and the children and young people.

IN-DEPTH REVIEW: ADDITIONAL QUALITY APPRAISAL); SYNTHESIS

After consultation with Trygfonden a research question for an in-depth review will narrow the focus to specific area of interest to the funder. The discussion with Trygfonden will be based on the overall results of the mapping in terms of topic and sub-topic coverage.

More detailed data extraction will be undertaken for the in-depth review, including detailed information about participants, settings, intervention, control or comparison conditions, outcomes and results. Information to be extracted is expected to include the following:

- eligibility criteria specified
- method to generate allocation to groups
- participants and outcome assessor;
- evidence of sample size calculation;
- presentation of estimate of effect size and its precision

A modified version of the risk of bias model developed by Professor Barnaby Reeves in association with the Cochrane Non-Randomized Studies Method group will be used in order to develop a tool to assess the risk of bias in the included randomised, quasi-randomised and quasi-experimental studies included in the in-depth review. This model, an ex-tension of the Cochrane Collaboration's risk of bias tool, covers risk of bias both in RCTs and in non-randomized studies that have a well-defined control or comparison group.

The intention is that the modified version of this model will address the following nine risk-of-bias judgement items:

RISK-OF-BIAS JUDGEMENT ITEMS:

- **sequence generation** (Judged on a low/high risk/unclear scale)

- **allocation concealment** (Judged on a low/high risk/unclear scale)
- **confounders** (Judged on a 5 point scale/unclear)
- **blinding** (Judged on a 5 point scale/unclear)
- **incomplete outcome data** (Judged on a 5 point scale/unclear)
- **selective outcome reporting** (Judged on a 5 point scale/unclear)
- **other potential threats to validity** (Judged on a 5 point scale/unclear)
- **a priori protocol** (Judged on a yes/no/unclear scale)
- **a priori analysis plan** (Judged on a yes/no/unclear scale)

On a 5-point scale, 1 corresponds to low risk of bias and 5 corresponds to high risk of bias. A score of 5 on any of the items assessed on the 5-point scale translates to a risk of bias so high that the findings will not be considered in the data synthesis because they are more likely to mislead than inform.

Quality appraisal of the included studies will precede any declaration of results. Use of the aforementioned modified risk of bias tool will exclude studies with too high a risk of bias. Information about both internal validity (the internal quality of the included studies) and external validity (across sectors and countries) will be extracted ready for full discussion in the synthesis. We intend to use the GRADE items relating to internal validity (1.) and external validity (2.-4.):

1. Limitations in the design and implementation of available studies suggesting high likelihood of bias.
2. Indirectness of evidence (indirect population, intervention, control, outcomes).
3. Unexplained heterogeneity or inconsistency of results (including problems with subgroup analyses).
4. Imprecision of results (wide confidence intervals).

The synthesis for the mapping will focus on interventions and outcomes in the three topic areas.

As different computational methods may produce effect sizes that are not comparable, we will be transparent about all methods used in the primary studies (research design and statistical analysis strategies) and use caution when synthesizing effect sizes. Special caution will be taken concerning studies using regression discontinuity (RD) to estimate a local average treatment effect (LATE). These will be included, but may be subject to a separate analysis depending on the comparability between the LATEs and the effects from other studies. We will in any case check the sensitivity of our results to the inclusion of RD studies. In addition we will discuss the limitation in generalisation of results obtained from these types of studies.

The synthesis for the in-depth review will combine the results both narratively and meta-analytically (if appropriate), focusing on interventions and outcomes targeting specific groups of professionals within the topic or sub-topic area identified and agreed and the research question for the in-depth review. In this respect a detailed analysis of the internal and external validity of studies included in the in-depth review should be possible. A subgroup analysis of the higher quality trials will be undertaken, if appropriate.

Draft reports at mapping and in-depth stages will be submitted to Trygfonden for comment and a final version will be produced following feedback from the funder.

REVIEW TEAM

The project is led by Professor Carole Torgerson at Durham University, working with Dr Louise Gascoine and Ian Moore, also of Durham University and in informal collaboration with Dr Chantal Nielsen (SFI lead), Dr Trine Filges and Dr Bjørn Nielsen at SFI Copenhagen.

Carole is Professor of Education at Durham University, where she undertakes research into the effectiveness of education and social interventions. She also will hold a visiting Chair at SFI for the period January 2017 – September 2017. Carole is an experienced systematic reviewer and methodologist, having completed over 25 systematic reviews in a wide range of topic areas. She has published a number of substantive and methodological reviews and also a book and book chapters on the conduct of rigorous SRs (for example, Torgerson, 2003; Torgerson et al, 2012). Specifically, Carole has published a relevant review in the field of professional development of dental practitioners (Firmstone et al, 2013). Carole would lead on all aspects of this SR (first author), including its design, and writing the proposal and protocol, and undertaking, co-ordinating and quality assuring all stages of the review.

Louise currently holds Research Fellow positions at both Durham University and University of York. Her work on this project would be completed at Durham University. Louise is an educationalist with experience of all aspects of the systematic review process, including rapid evidence synthesis. She is particularly adept at writing and refining search strings to maximise output. Louise has published a number of systematic reviews in the field of education. Louise would undertake all of the electronic searches for the proposed review; and she would contribute fully to all other aspects of the review, including screening, data extraction and quality appraisal and report writing.

Chantal is a senior researcher in the department for Schooling and Education at SFI – The Danish National Centre for Social Research. She has recently lead a literature review, which had the goal of identifying and describing international experiences with programmes and interventions aimed at widening participation in higher education. The SFI-report that documents this study is: Nielsen, C.P. et al. (2015) “*Mønsterbryder-indsatser på de videregående uddannelser - En forskningskortlægning*”, SFI report no. 15:21. An overarching interest Chantal has in all her work is how to succeed in transferring research-based knowledge to professionals in the field. Through her involvement in projects and collaboration with colleagues in other departments at SFI, Chantal is also familiar with challenges facing the Danish social sector in broader terms. Chantal would contribute to all stages of the review, and place the findings of the review in context, by discussing the practical/structural relevance and political/cultural

feasibility of introducing/transferring interventions, strategies and approaches that have been found effective in other countries and settings into the Danish educational and social sectors.

Trine is a senior researcher at SFI-Campbell at SFI – The Danish National Centre for Social Research. Trine is an experienced systematic reviewer and methodologist, having completed a number of systematic reviews in social welfare topic areas as well as in the field of education. She has published ten Campbell Systematic reviews and is currently the lead reviewer on four Campbell Systematic Reviews and further involved as a reviewer in two Campbell Systematic Reviews. Trines fields of expertise are systematic review methods and statistical analysis; and she will contribute to the quantitative data extraction, methodological quality appraisal and meta-analysis.

Ian graduated in 2015 with a First-Class Honours in German and Teaching English as a Foreign Language from Swansea University. From here, he completed a MSc in Applied Linguistics and Second Language Acquisition at Oxford University. His research interest whilst at Oxford focused on Global Englishes and he will be presenting his research at conferences in both Helsinki and Vienna later this year. Ian is now completing a PhD in Education at Durham University, focusing on personality change during a year abroad, and how this serves as a key individual difference in language gain whilst abroad. Ian has practical experience of teaching, having worked as a pre-sessional tutor for Swansea University.

Bjørn is a research librarian at SFI – The Danish National Centre for Social Research. He has three years of experience in developing and writing systematic reviews. As a part of undertaking systematic reviews, Bjørn has experience in developing systematic search strategies and processes of reference management. Bjørn will contribute with assisting and development of the systematic search strategy, reference management and grey literature searches for this review – as well as assisting with aspects relating to systematic literature searches in Campbell review methodology.

APPENDIX

APPENDIX A: JUSTIFICATION OF EXCLUSION OF STUDIES USING AN INSTRUMENTAL VARIABLE (IV) APPROACH

Studies using instrument variables (IV) for causal inference will not be included as the interpretation of IV estimates is challenging. IV only provides an estimate for a specific group namely, people whose behaviour change due to changes in the particular instrument used. It is not informative about effects on never-takers and always-takers because the instrument does not affect their treatment status. The estimated effect is thus applicable only to the subpopulation whose treatment status is affected by the instrument. As a consequence the effects differ for different IVs and care has to be taken as to whether they provide useful information. The effect is interesting when the instrument it is based on is interesting in the sense that it corresponds to a policy instrument of interest. Further, if those that are affected by the instrument are not affected in the same way the IV estimate is an average of the impacts of changing treatment status in both directions, and cannot be interpreted as a treatment effect. To turn the IV estimate into a LATE requires a monotonicity assumption. The movements induced by the instrument go in one direction only, from no treatment to treatment. The IV estimate, interpreted as a LATE, is only applicable to the complier population, those that are affected by the instrument in the ‘right way’. It is not possible to characterise the complier population as an observation’s subpopulation cannot be determined and defiers do not exist by assumption.

In the binary-treatment– binary-instrument context, the IV estimate can, given monotonicity, be interpreted as a LATE; i.e. the average treatment effect for the subpopulation of compliers. If treatment or instruments are not binary, interpretation becomes more complicated. In the binary-treatment– multivalued-instrument (ordered to take values from 0 to J) context, the IV estimate, given monotonicity, is a weighted average of pairwise LATE parameters (comparing subgroup j with subgroup $j-1$). The IV estimate can thus be interpreted as the weighted average of average treatment effects in each of the J subgroups of compliers. In the multivalued-treatment (ordered to take values from 0 to T) – multivalued-instrument (ordered to take values from 0 to J) context, the IV estimate for *each pair of instrument values*, given monotonicity, is a weighted average of the effects from going from $t-1$ to t for persons induced by the change in the value of the instrument to move from any level below t to the level t or any level above. Persons can be counted multiple times in forming the weights.

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APPENDIX B: RESULTS OF INITIAL SCOPING SEARCH

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