

Review of research literature about the use of lesson study and lesson study-related practices relevant to the field of special needs and inclusive education

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Abstract:

There are practical questions about how inclusive schools can enable quality teaching and teachers' professional development that are relevant to students with special educational needs (SEN). In moves towards inclusive education, teachers are confronted with issues about their knowledge, skills and perceived efficacy to adopt inclusive teaching approaches. Based on an explicit approach to inclusive teaching, this paper illustrates how Lesson Study (LS) and Lesson Study related professional development practices embody the values of inclusive teaching and reflective practice. Peer-reviewed academic papers about LS and LS related practices were reviewed. This found that these practices were predominantly used in continuing professional development and evaluated with a focus on their contexts, processes and outcomes in ordinary and specialist settings. The extent to which LS and LS related practices have been evaluated in these settings with different kinds of SEN is also examined. Based on this review increased use and evaluation of lesson study and lesson study related practices are recommended.

Key words

lesson study, inclusion, professional development, special educational needs, collaboration, reflective practice

Introduction

This paper makes a case for going beyond the advocacy of inclusive teaching to consider ways to promote inclusive teaching of students with special educational needs (SEN). It argues that there is a need to examine different models of collaborative reflective practice that serve inclusive purposes. It starts with a perspective on inclusive teaching and then reports a review of contemporary research literature about the use of lesson study (LS) and related practices that are relevant to the inclusive teaching of students with special educational needs (SEN). The aim of the paper is to illustrate the extent to which LS type practices embody the values of inclusive education and reflective practice, broadly conceived. In so doing the paper will show how LS has been used and so how it can contribute practically to enhancing professional practices. The paper introduces current ideas about inclusive teaching and collaborative reflective practice and then links them to the concepts and practices of LS. Based on an analysis that shows how LS connects with other traditions of professional development, the paper then presents two connected reviews of the literature: i. of LS research papers and ii. of LS related practices, both related to special needs and inclusive education.

Need for professional development models

With the adoption of inclusive education, there has been a shift in many countries to an educational model of learning difficulties and disabilities. This model focuses on the learning environment, school curriculum, school climate and barriers to learning at different levels, without ignoring individual needs (Kinsella and Senior 2008; Meijer and Watkins 2016). The United Nations Educational, Scientific and Cultural Organisation (UNESCO) views inclusive education in terms of responding to the diversity of needs through increasing participation in learning, cultures and communities (UNESCO 2005). It involves changes in content, approaches and structures, within a common vision that covers all children with a conviction that it is

the responsibility of the regular system to educate all children, which has been presented as a universal policy challenge (OECD 2018).

Inclusive education is promoted by UNESCO, OECD and regional organisations like the European Agency for Special Needs and Inclusive Education (EASNIE 2012). Many European countries have the implementation of inclusive education high on their educational agenda. Data from 28 European countries, show inclusive enrolment rates from 92.02 - 99.97%; with a mean of 98.19% (EASNIE 2018). This means that pupils with SEN are in a mainstream class at least 80% of class time and that there is some use of separate schools, units and separate classes in mainstream schools in all these countries. The core policy assumption is that children with SEN would benefit most from education alongside neuro-typical children in mainstream schools. However, most countries still have some form of separate special provision, even though the trend is towards reducing the number of special (Schwab 2019). Putting inclusive values into operation means making whole school level changes to better educate to respond to student diversity in race, culture, language, family structures, and other dimensions of difference beyond ability or disability (Ferguson 2008). SEN or disability is only one aspect of the diversity encompassed within inclusive education (Booth and Ainscow 2011).

However, there are practical questions about how an schools can create quality teaching and teachers' professional development. In moves towards inclusive education, teachers are a most important aspect of systems change as the capability of schools to accommodate SEN and disabilities depends on teacher capabilities and dispositions. This means teacher professional development is needed to maximize inclusion. But, teachers are increasingly confronted with issues to which they are not able or feel they cannot respond adequately, so doubting their teaching efficacy. If teachers are not assisted in further developing their pedagogical repertoire, this can lead to stress, burnout and attrition (Goei and Kleijnen 2009).

What is meant by 'inclusive' and by 'inclusive teaching' is open to interpretation, and by implication what counts as inclusive teacher education and development.

Education involves educational values and philosophies that set a norm or standard against which current practices can often fall short (Goei, Norwich and Dudley 2020). This is relevant to a value position as complex and pervasive as inclusive education and teaching. The terms inclusion/inclusive are difficult ones to use precisely for several reasons. First, inclusion is by definition a relative term, it is about inclusion into something and there is always the risk that being included in something might involve being excluded from something else. Second, inclusion can mean different things, e.g. be about placement or presence, about academic participation / engagement, social participation or belonging or achievement in a common curriculum framework. Thirdly, being inclusive can refer to different levels of the system, e.g. a class within a school, a school within a local area organisation, or local area organisations within a national framework. It is possible to be inclusive at one level (i.e. being in an ordinary rather than a special school), but exclusive at another (i.e. being in a separate unit and not in ordinary class). This conceptual complexity calls for greater specification of the *types of inclusion* (placement, academic and/or social participation framework for achievement) and the *levels of the system*, be it national, institutional, or class level (Norwich 2014).

Other concepts of inclusive teachers and teaching

However, it is possible to formulate a general framework which can encompass these diverse interpretations. EASNIE has developed such a framework, the *Profile of Inclusive Teachers* (EASNIE 2012). This was the result of research, country discussions and representatives of stakeholder groups for teacher education during 27 country study visits. The Profile has a framework of core values and areas of competence that support the “development of teachers as lifelong learners and reflective practitioners through experiential learning and action-based research” (EASNIE 2012, 19).

1. *Valuing Learner Diversity* – learner difference is considered as a resource and an asset to education.
2. *Supporting All Learners* – teachers have high expectations for all learners’ achievements.
3. *Working With Others* – collaboration and teamwork are essential approaches for all teachers.

4. *Personal Professional Development* – teaching is a learning activity and teachers take responsibility for their lifelong learning.

This EASNIE profile relates to a teacher competency framework which has been developed so that Universal Design for Learning (UDL) principles can be applied to ensure accessibility of all learner types to the learning environment (Baldiris Navarro et al., 2016). The UDL involves some general principles for overcoming barriers that are presented within a learning environment: covering i. representation (resource accessibility), ii. action and expression (alternative communication methods) and iii. engagement (strategies to draw into learning).

Two of these core value areas within the EASNIE *Profile* involves *Working with others* and *Personal professional development* that relate to competences that are particularly relevant to the focus of this paper:

Working With Others is underpinned by areas of competence about all teachers working in teams, collaboration as an essential approaches for all to supports professional learning with and from other professionals.

Personal Professional Development is underpinned by areas of competence about teachers as reflective practitioners with Initial teacher education as a foundation for ongoing professional learning. .

Another approach to what is meant by inclusive teaching comes from an analysis of two perspectives. Firstly, the Salamanca Statement (UNESCO, 1994) which said of inclusive education:

‘The fundamental principle of the inclusive school is that all children should learn together, wherever possible, regardless of any difficulties or differences they may have’. (UNESCO 1994, section 7).

Secondly, a more recent statement about inclusive pedagogy is that:

‘Inclusive pedagogy is an approach to teaching and learning that supports teachers to respond to individual differences between learners but avoids the

marginalisation that can occur when some students are treated differently’ (Florian and Spratt 2013, 119).

From the above inclusive teaching is about togetherness in learning and responding to individual differences, but this involves qualifications. In the Salamanca Statement it is ‘wherever possible’, implying that there might be some limits to togetherness. In the second statement, responding to individual differences has to be done in a way that ‘avoids marginalisation’, indicating that responding might result in marginalisation. In other words, seeking to respond to individual differences might result in limiting togetherness and some separation. So, recognising differences, or what is called differentiation, has the potential to be enabling, but also to be stigmatising (marginalising). The above statements point to a dilemma or a balance of risks about how to respond to difference / differentiation. This is the dilemma of difference perspective on inclusive teaching (Norwich 2014) which recognises that teaching involves trying to achieve several values, such as responding to individual differences (or needs) and being positive and respectful of learners (not marginalising or devaluing). But when these values clash there can be dilemmas that require a balancing of risks. So, though the aim is to have it ‘all ways’ there may be limits which are to do with a value tension (responding to differences/needs and avoiding marginalisation). This balancing of risks calls for creative ways to resolve the tension, something which depends on both teacher capabilities, contexts and resources.

This ‘balancing of risks’ approach contrasts with a contemporary perspective on inclusive pedagogy, the *inclusive pedagogical approach in action* (Florian and Spratt 2013). This approach is based on several assumptions, e.g. that difference is part of the human condition, all can make learning progress, there is a commitment to support all learners and rejecting that the presence of some holds back others. Regarding teachers’ beliefs, it is also assumed that teachers are capable of teaching all learners and this involves replacing a ‘fixed view’ of ‘ability’ with an open-ended learning potential perspective. By contrast, the specific model of inclusive teaching adopted in this paper recognizes that some teaching takes place in separate settings and in line with the balancing of risks avoids false oppositions. So, inclusive teaching involves:

1. Enabling as full classroom participation in learning opportunities as possible (Salamanca Statement quote above),
2. Extending as much as possible what is ordinarily available for all students, but arranging additional or different activities alongside when ordinary activities cannot be meaningfully adapted for a minority,
3. Differentiating by pupil choice where meaningful, but also by flexible and temporary grouping,
4. Adopting a flexible approach that is driven by learner needs, while taking account of national curriculum expectations.
5. Seeing difficulties in learning as professional challenges irrespective of learner abilities and disabilities.

In this way the *Profile of Inclusive Teachers* (EASNIE 2012) can accommodate the multi-dimensional nature of inclusive education. For some this multi-dimensionality can be used to make sense of inclusive teaching in separate settings, by emphasising the participation, belonging and achievement dimensions and *not* the mainstream placement one. This is what, for example, Mary Warnock advocated in the concept of inclusive education as all engaged in learning but not necessarily “all under the same roof” (Warnock 2005). However, this is not the model of inclusive education / teaching adopted here which gives equal emphasis to mainstream placement as the other dimensions and recognises a need to achieve an optimal balance between them.

Lesson Study

Lesson Study, which was originally developed in Japan over a century ago, is a collaborative form of professional development involving an elaborated version of a study-plan-do-review model of practice (Lewis 1998; see figure 1). It has come to prominence internationally over the last 20 years in different variations including in several European countries (e.g., UK, the Netherlands, Switzerland, Sweden, Norway, Spain and others) and the USA, though its centre of activity is the Far East (Japan, Singapore, Hong Kong and China).

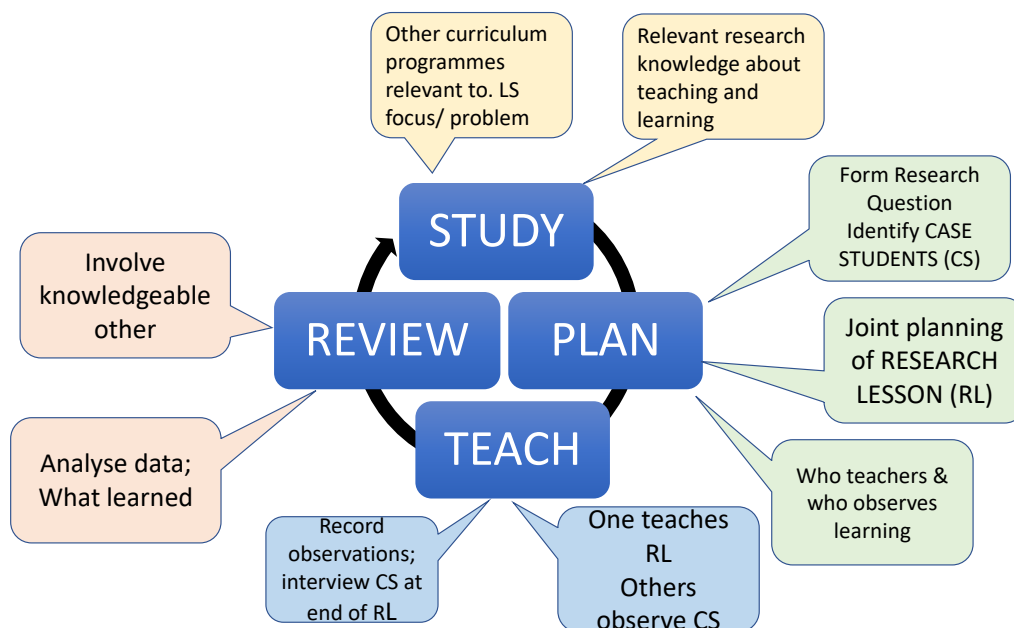


Figure 1. Phases in Lesson Study Sequence

Despite some variations in LS practice, the basic principles involve:

1. Collaborative design of lessons or units of study,
2. Execution of the design with observation,
3. Reflection on the product with a view to its improvement.

In LS practice a small group of teachers collaborate to develop a series of *research lessons* in which different approaches to teaching are tried out to improve specific forms of pupil learning, with the aim of enhancing teaching knowledge (Takahashi and Yoshida 2004). In the first is the *study phase* of the process (Figure 1) the team draws on their professional knowledge and any research informed knowledge that is relevant to the LS focus. In the next *planning stage* a research lesson is planned to address the LS question. In the UK version of LS (Dudley 2012), the LS cycle usually consists of three *research lessons* (RL), each preceded and followed by *review and planning meetings* (RP). Teachers in the LS teams focus on 1-2 *case students* in the planning, teaching and evaluation of the research lessons. These students are identified depending on the topic and aims of the LS (Dudley 2012).

Once the research lessons has been jointly planned one of the team teaches the research lesson, while the others observe the case students' learning in the third *teaching phase*. However, there are other versions of LS, in which the number of research lessons, the team membership and other factors might vary (Norwich 2018). For example, in a Netherlands LS model mainstream teachers adaptive their teaching to a diversity of needs (Goei, Verhoef, Coenders, De Vries, and van Vugt 2015;) by using the three-tier preventive logic (Kratochwill, Volpansky, Clements and Ball 2007). Here one pupil represents pupils at each of the tier 1 (general provision), 2 (targeted provision) and 3 (specialized provision) (Schipper, Goei, de Vries and van Veen 2017). In the fourth *review phase*, the team in the review and planning meeting draws on their collected evidence to answer the LS question. On this basis and further drawing on professional and research knowledge (study phase) the next research lesson is planned.

Professional development traditions that resemble LS

LS can be seen to be a version of a pedagogic collaborative reflective practice (Norwich and Jones 2014) and as such resembles various allied professional development traditions found in education, such as teacher practice enquiry, e.g. action research, professional learning models, peer instructional coaching and professional learning community.

Figure 2 shows four other traditions that share some key features of reflection and collaboration with LS (Norwich 2018):

1. Professional learning community: this is linked to the school improvement tradition which involves collaborative staff development approaches and for school and system improvement (Harris and Jones 2010).

2. Practice-based enquiry: this is linked to the teacher as researcher tradition when teacher research or enquiries provide insight into classroom practice to make changes (Fichtman, Dana and Yendol-Silva 2003).
3. Group problem-solving tradition: this is linked to the outside support professional (psychological / therapeutic) tradition in which adults are supported to find solutions to complex problems in classrooms and the wider school community (Wilson and Newton 2006; Landor and Todd 2010).
4. Professional learning tradition: this is linked to the cross-professional growth tradition of promoting professional growth and development across different occupations, such as coaching (Lord, Atkinson, and Mitchell 2008).

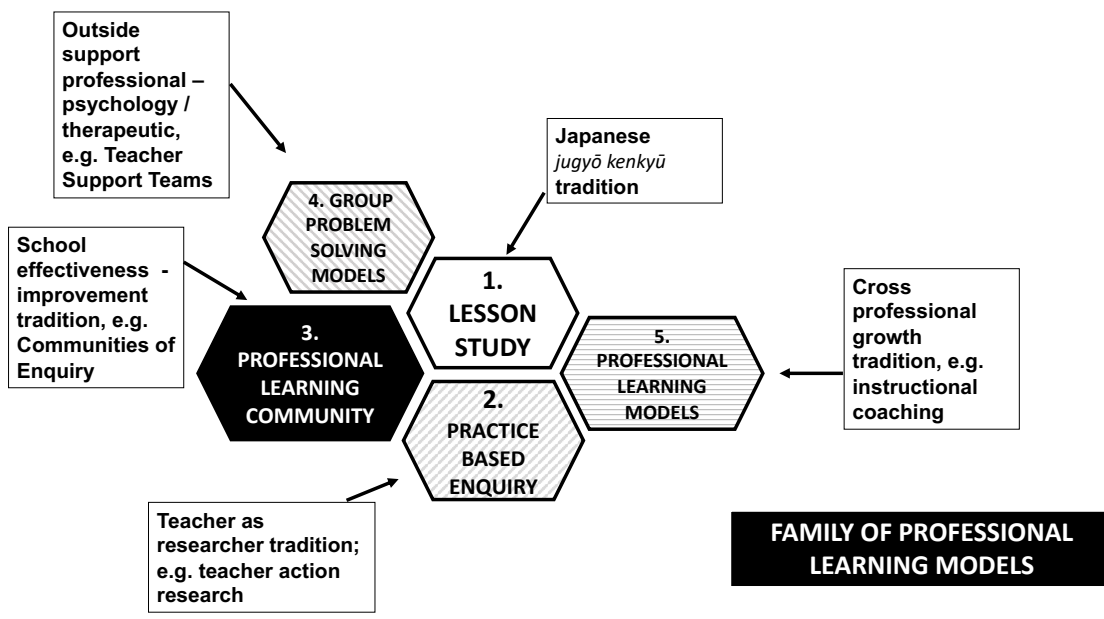
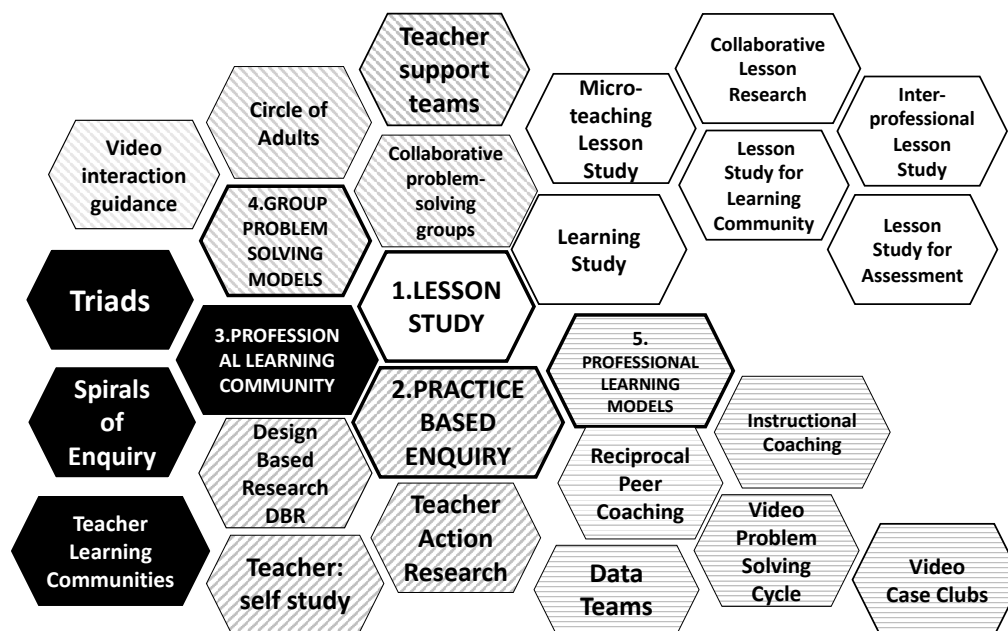


Figure 2. Family of professional model traditions and their contexts (arbitrary position with respect to lesson study)

Figure 3 illustrates some specific versions of professional development practices in each of these traditions, using tradition specific background pattern coding. The examples of these different traditions (in capital letters), which are not an exhaustive set of examples (in lower case titles). However, this analysis does indicate that it

would also be useful to review literature in the other LS related traditions that are relevant to special needs and inclusive education. Hence, this review of the literature about i. LS and then ii. LS-related professional development.

Figure 3. Family of professional models with examples in each of 5 traditions
(traditions in CAPITALS and numbered; examples of traditions surround traditions, each coded with own background pattern).



Review of LS research

The aims of this review of LS research was to:

1. Identify the following aspects of the LS practices
 - i. Professional development stage.
 - ii. School phase and setting of LS
 - iii. Purposes of using LS and LS team/group membership.
 - iv. Evaluation methodology and focus.
 - v. Area of SEN and curriculum area involved.
2. Summarise main results of each LS paper analysed thematically.

The aims of this review of LS-related research were similar to the above review, to identify the following aspects of the LS-related practices

- i. Professional development stage.
- ii. School phase and setting of LS
- iii. Purposes of using LS and LS team/group membership.
- iv. Evaluation methodology and focus.
- v. Area of SEN and curriculum area involved.

But, the results of these LS-related research were not analysed thematically as the main point of this second review was to compare the LS and LS-related practices not their evaluations.

Methods:

LS research review:

This LS review focused on the academic research literature in peer-reviewed journals in the English language. It does not draw on professional practice papers and books about LS. The following search terms were used: lesson study or learning study, together with each of these terms: special, special educational needs, teaching, inclusion, difficulty and difficulties. These databases were searched: ERIC, British Education Research Index, Australian Education Index and Educational Research Complete. The search was for all entries in these databases with no specified time period.

Lesson Study PRISMA diagram

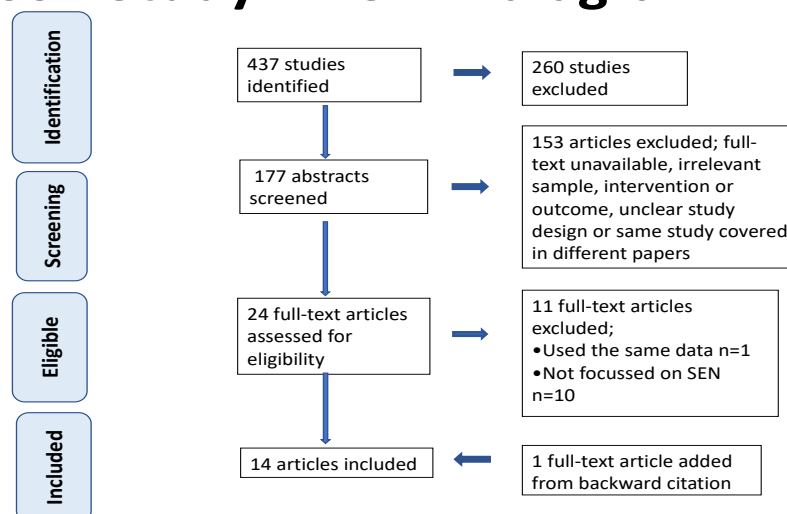


Figure 4. PRISMA diagram for LS practices

The PRISMA diagram (Moher et al. 2009) in figure 4 shows. That though 437 studies were initially identified from their titles, 269 were excluded as not relevant due to having no focus on LS or SEN. Of the remaining 177 papers 153 were screened out because: the abstract was in English but text in another language, samples were not relevant to SEN), the intervention or outcome was not clearly linked to LS, the study design was unclear or the same study was covered in an included paper. Of the remaining 24 papers, the full texts were analysed, resulting in 11 exclusions as some papers used the same data or were not about SEN. By this method 14 papers were included in the review, with one extra added from a backward citation. Using this rigorous extraction procedures, some of papers of authors 1 and 2 were selected for the review.

These 14 papers were then analysed by the second author and moderated by the first author in terms of the following areas:

- i. Professional development stage.
- ii. Purposes of using LS.
- iii. School setting of LS.
- iv. School phase.
- v. LS team/group membership.
- vi. Evaluation methodology and focus.
- vii. Area of SEN involved.
- viii. Curriculum area involved.

In addition, the summaries or abstracts of the LS papers were compiled and analysed thematically using nvivo by the first author, moderated by the second author focussing on the main results from each LS paper. The thematic analysis started with three initial themes covering outcomes, processes and contexts of LS. These were elaborated upon during the analysis and an additional one added, about limitations and challenges to LS.

LS related review:

For this review the term 'LS-related professional development' will be taken to include these practices: Problem solving groups, Professional learning communities, Action Research, Professional Collaboration, Teacher coaching, Co-teaching of special education and general education teachers. To search for these LS-related practices the following databases were searched for peer-reviewed papers in the English language: ERIC, British Education Research Index, Australian Education Index and Educational Research Complete. The search terms were: action research OR professional learning community OR teacher coaching OR problem solving group OR collaborative (in all text) AND SEN OR Disability or inclusion AND Teaching OR lesson (in abstracts).

From this search 1997 paper abstracts were identified for title and abstract screening, as shown in figure 6. From this set, 1866 were excluded for a variety

Other practices PRISMA diagram

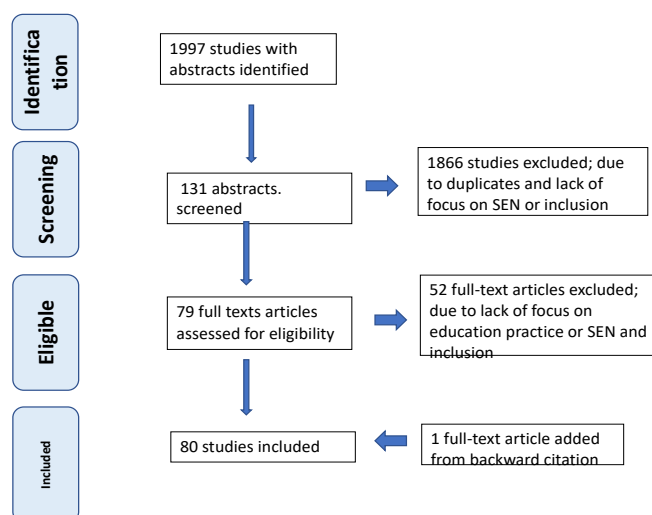


Figure 6. PRISMA diagram for LS-related practices.

of reasons: not focussed on education practice, or not specifically about SEN and inclusion or about a practice that did not involve professional peers or teams. It was

decided to also exclude peer coaching that involved an expert-novice relationships as not being enough like lesson study. The 131 remaining papers were then screened using the full text, leading to another 52 being excluded, for similar reasons as in the previous step. This left 80 papers including 1 study that was added from backward citation.

These 80 papers were then analysed in terms of the following areas:

1. Type of LS relate practice
2. Phase of professional development
3. Focus of practice
4. School setting of practice
5. School phase
6. Team/group membership
7. Evaluation methodology and focus
8. Area of SEN involved
9. Curriculum area involved.

Results

Table 1 summarises the overall pattern of findings for LS and LS related papers. For the 80 LS related papers any single paper might be scored under more than one type of LS related practice; so totals in the tables might not add up to 80 for LS related practices.

Table 1: Frequency of papers about LS and LS related practices		Totals
LS practices		14
(Column % in brackets)		
LS related practice approach	Co-teaching	41 (37%)
	Professional / teacher collaboration	34 (30%)
	Action Research	12 (11%)
	Teacher coaching	14 (13%)
	Problem solving group	5 (4%)
	Professional learning community	6 (5%)

Table 1 shows that LS practices were as frequent as the LS related practices of action research and teacher coaching papers. However, co-teaching and professional /

teacher collaboration were the most commonly found LS related practices. Action research as a research approach was also often used with some other professional development practice. Of the last three LS related practices, teacher coaching was used more than the other two – problem-solving groups and professional learning community.

Table 2 shows with that most of the LS and LS related practices were in post-initial teacher education/training. In this one LS case, it was in the pre-service training of special education teachers, not for general or subject specific teachers.

Table 2 (Column % in brackets)		Totals	
		LS	LS related
Professional development stage	Pre-service	1(7%)	9 (11%)
	Continuing professional development (CPD)	13 (93%)	71 (89%)

The analysis of the purposes for using a practice was only done for LS, not for LS related practices as these are diverse, with their descriptions not open to the kind of analysis relevant to LS below. Table 3 shows that the primary purpose of using LS was teacher professional development of knowledge and skills. Reference to teacher motivation as a purpose for using LS was much less frequent as it was for curriculum development purposes. Explicit use of LS for pupil learning purposes was only in 4 studies, though many studies had multiple purposes, as shown in full LS practice analysis table in the appendix.

Table 3 (Column % in brackets)			Totals
LS Purpose	Teacher Professional Development	Motivation	3 (11%)
		Knowledge	12 (43%)
		Skills	7 (25%)
	Curriculum Development		2 (7%)
	Pupil Learning		4 (14%)

Given the diversity of LS related practices, the analysis of the focus of professional development practice was relevant only to LS related practices. Here the focus was

distinguished into 3 areas, whether the focus was mainly on: i. specific teacher actions, ii. broad classroom inclusive practices or iii. about the adapting of a subject programme to the needs of students with SEN / disabilities. Table 4 shows that the focus on inclusive practice was clearly the main focus of practices in these papers, with the focus on specific teacher action the least frequent.

Table 4 (Column % in brackets)		Totals
Focus of LS related practices	Inclusive practice	55 (71%)
	Subject Programme	18 (23%)
	Teacher Action	4 (6%)

The distinction between setting and school phase in tables 5 and 6 is the difference between where the practice takes place (setting) and the students' stage of learning (school phase). Table 5 shows that the use of LS was across different settings, primary, secondary and special schools and units/classes. The use of LS was most frequent in secondary schools and about the same level in primary and special settings. For LS related practices, there was more LS related practices in primary than secondary schools and much less in special settings.

Table 5 (Column % in brackets)			Totals	
			LS	LS related
School setting	Primary school		5 (25%)	46 (50%)
	Secondary school		9 (45%)	37 (40%)
	Special setting	School	4 (20%)	4 (4%)
		Unit/Class	2 (10%)	6 (6%)

Table 6 shows the LS and LS related practices were focussed on teaching and learning much less in the early years than in the primary and secondary phases. Comparing Tables 5 and 6 indicated that special setting use of LS and LS related practices was across the three school phases. However, there was no use of LS in the tertiary phase, but a small number of LS related practices in that phase.

Table 6 (Column % in brackets)		Totals	
		LS	LS related
	Early Years	2 (10%)	5 (5%)

School Phase	Primary	8 (38%)	49 (47%)
	Secondary	11 (52%)	47 (45%)
	Tertiary	0	3 (3%)

Table 7 shows that the both LS and LS related teams involved ordinary and specialist teachers as well as other professionals, e.g. psychologists, advisers. However, in LS related practices other professionals were proportionally less than teachers and specialist teachers than in LS practices. Given the frequencies, some teams had mixed membership.

Table 7 (Column % in brackets)		Totals	
		LS	LS related
Team/Group	Ordinary Teachers	11 (%)	65 (81%)
	Specialist Teachers	5 (36%)	57 (71%)
	Other Professionals	8 (57%)	28 (35%)

Table 8 shows the extent to which these LS and LS related papers included some evaluation of these practices and what the evaluation focus involved. This table shows that more LS related than LS papers were overview accounts of the practice; how it was conducted, what can be expected, the conditions for using it and sometimes a general overview of its outcomes (6% LS v 18% LS related). Table 8 also shows that the evaluation approach used in LS and LS related studies were mostly surveys/ interviews and less often case studies. Experimental evaluations were rare for LS and LS related studies. These evaluations of LS and LS related practices were focussed mainly on processes and outcomes, and in both types of practices less on context. Most evaluations were focussed on two or all three aspects.

Table 8 (Column % in brackets: some evaluations are multiple coded)			Totals	
			LS	LS related
Evaluation	Methodology	Case studies	4 (25%)	12 (17%)
		Survey, interviews	9 (56%)	43 (61%)
		Experiment	2 (13%)	3 (4%)
	Overview of LS or LS related practices	1 (6%)	13(18%)	

	Focus	Context	6 (42%)	12 (15%)
		Processes	11 (79%)	63 (79%)
		Outcomes	9 (64%)	42 (53%)

Table 9 shows that use of LS and LS related practices involved students with a range of SEN, with cognitive and learning difficulties being the main area. For both types of practice far fewer involved students with language and communication difficulties and social emotional and mental health difficulties. No students were involved in LS practice and very few in LS related practices. But, mainly for LS related practices the papers did not specify the SEN area, or it was assumed to be cross-SEN.

Table 9 (Column % in brackets; some areas are multiple coded)		Totals	
		LS	LS related
SEN Area	Cognitive & learning difficulties	9 (64%)	32 (37%)
	Social emotional and mental health difficulties	1 (7%)	4 (5%)
	Language & communication difficulties	2 (14%)	8 (9%)
	Sensory difficulties	0	2 (2%)
	Not specified or assumed cross SEN	2 (14%)	41 (47%)

Table 10 shows most LS use was in relation to maths and literacy teaching and learning, while some was in relation to other subjects, e.g. science or social-emotional behaviour. There was a similar pattern in LS related use, but far more did not specify the subject area in the LS related than the LS use.

Table 10 (Column % in brackets)		Totals	
		LS	LS related
Curriculum Area	Maths	3 (20%)	10 (12%)
	Literacy	2 (13%)	12 (15%)
	Other subject (e.g. science)	5 (33%)	11(14%)
	Not specified	5 (33%)	48 (59%)

Thematic analysis of main results from each paper

Summaries of the main results from each paper were compared for similarities and differences and the emerging themes were reorganised to form a concept map of

themes. As figure 5 shows, the higher level themes were about i. teacher outcomes, the ii. LS context and processes and iii. the limitations and challenges of LS use. The first two general themes were the main ones in terms of the frequency of references.

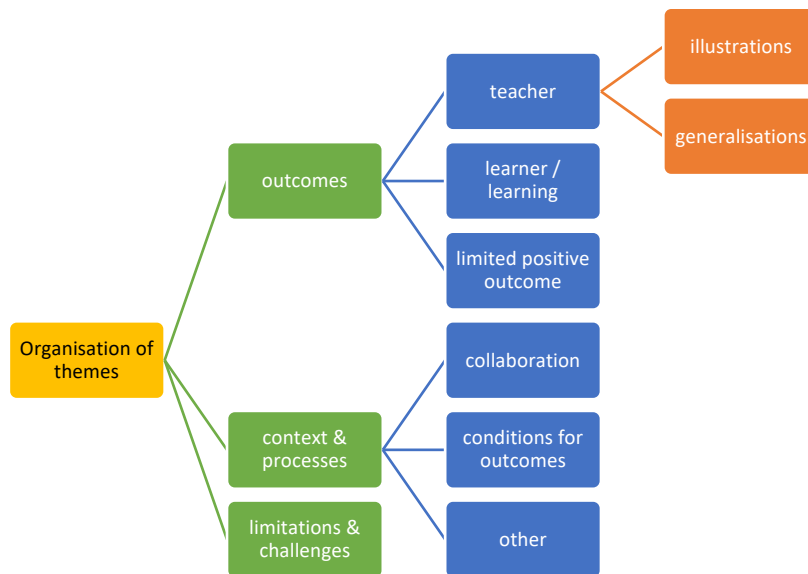


Figure 5. Relationship between themes in the main results of LS use.

Outcomes:

The teacher outcomes from LS use could be sorted into *generalisations* and *illustrations* of these outcomes. Generalisations refer to outcomes framed in general terms and relationships about some aspect of LS practice, while illustrations are observations or insights about particular practices. Typical generalisations were either in a general form, such as:

‘the lesson study process assisted them in devising pedagogical approaches to meeting student needs’

or in a more specific form: such as LS resulted in greater:

‘increased their ability to adapt an instructional plan to meet science learning goals for all students in an inclusive classroom’.

Typical illustrations were about teachers in interaction with others; such as:

‘the process enabled teaching assistants to have a fully participatory role’

Other illustrations were about:

‘successful bridging between theory and practice, with evidence of translation of theoretical knowledge into relevant teaching practice’.

There were fewer references to learner or learning outcomes, such as:

‘the Lesson Study process assisted them in developing insight into their students’.

There was only one study which referred to *limited positive outcomes*. This was a study that noted that though there was a positive teaching gain, it did not involve any:

‘significant increases in their knowledge of science content or learning disabilities’.

Context and processes:

The second main higher level theme, *processes and contexts* of LS use involved two specific sub-themes which were about: i. collaboration and team interaction and ii. the conditions for positive outcomes. The third sub-theme involved a set of individual references to specific processes and contexts.

Under the *collaboration and team interaction* sub-theme there were references to the role of teacher collaboration in using LS, on one hand, while on the other, there were more specific references to LS enabling collaboration with other professionals, e.g. between special education and general teachers. There were also references to how collaboration supported: ‘professional experimentation’ and how: ‘Lesson Study provided a format for collaboration and mutual support’.

Under the second specific *Conditions for learner positive outcomes* sub-theme, there were two references. One was about how:

‘critical edge to the process that has the potential to challenge teachers to go beyond the sharing of existing practices’ was using:

‘lesson study with an emphasis on listening to the views of students’.

The third sub-theme – other - involved 7 references to different processes, such as, the ‘intensive focus on student learning’, the facilitators' positive role, how LS enables reflective practice, critical role of a whole school approach, involve student participation and the focus on teaching.

Limitations and challenges

The third higher level theme, which was about limitations and challenges in LS use, only had 3 references. Two of these were about the barriers and difficulties of the LS process and the third to the LS context barriers.

Discussion and conclusions

Comparing LS and LS related practices

One feature of the use of LS and LS related practices from this review is their predominant use in continuing professional development and not in initial or pre-service teacher training and education. There has been a growth of interest in the use of LS in pre-service teacher education as shown in some recent reviews (e.g. Larsen et al., 2018). However, such reviews show more emphasis on LS as promoting reflective collaborative teacher practices than promoting inclusive teaching. The review also showed that both LS and LS related practices were used for students across the age range, from early years through to secondary age. However, the main use of LS related practices was with primary and secondary aged students. LS and LS related practices were also used in primary, secondary and specialist settings (schools and classes), though less so for LS related practices in specialist settings.

The participants in both LS and LS related practices were teachers, special education/ specialist teachers and other professionals, e.g. psychologists. This cross-professional participation is a feature of the special needs and inclusive education use of LS and related practices, reflecting a particular feature of the collaborative principle underlying LS. This cross professional participation also relates to another important feature of LS, the involvement of a ‘knowledgeable other’ in the team or group (Takahashi and McDougal 2016).

The reviews also showed that for both LS and LS related practices the most common area of pupil/student's SEN or disability was cognitive and learning difficulties. Though there was some use for students / learners with other SENs, this was much less so. As for the area of teaching and learning in which professional development was taking place, many reports did not specify a curriculum area, especially for LS related practices. In the latter case, this could be attributed to the finding that well over half of the LS related papers were overviews.

The reviews showed that for the evaluations of both LS and LS related practices the evaluations were mainly surveys, e.g. interviews and case studies, rather than experimental designs using a control group and measuring change. These evaluations focussed on the contexts, processes and outcomes of the practices for both LS and LS related reviews. However, there was relatively less focus on contextual factors in LS related practices. This might reflect that these practices (e.g. co-teaching and teacher collaborations) are less intensive than LS and so considered to be less affected by contextual factors.

Aims in LS practices and links to the types of LS related practices

It was clear from the review of the 14 LS papers that the primary aims of using LS was for teachers to develop their knowledge and skills, e.g. adapt teaching for students with SEN in an inclusive setting. Some LS practice was in specialist settings, even though this may not be considered an inclusive setting and so not relevant to inclusive teaching, as discussed in the introduction. Reference to aims was also about teacher motivation e.g. inclusive teaching efficacy, or curriculum development, e.g. align tasks in a tiered programme, though these aims were much less frequent. Sometimes the aims of LS use were framed in terms of teacher professional development and pupil learning outcome terms, but this was also done less frequently.

Most of what is called LS related practices (the 80 reviewed papers) involved co-teaching and professional / teacher collaboration. These represent fairly distinct

practices though they embody key LS type principles. In co-teaching, collaboration is between two teachers who teach a class that includes a pupil /student with a SEN in a mainstream class setting. However, some versions of co-teaching do not involve collaborative and joint review practices, a version which are frequently practised (Friend et al. 2010). By contrast, in professional / teacher collaboration there may be many more participants who are taking part in a development involving collaborative action research principles and practices. The other LS related practices, such as, problem-solving groups, professional learning community or teacher coaching were identified much less frequently, perhaps because they are more intensive practices that are used less often for inclusive teaching purposes. However, as pointed out above, with teacher coaching there were many papers identified initially, but which were excluded from the review. This was when coaching was considered to be overly directive and not involving reciprocal peer interaction and team work.

Main results from evaluations of LS practices

The analysis of the findings of the LS use in the 14 papers showed an alignment between the aims in using LS and the findings of the evaluations in terms of teacher, learner and learning outcomes. The other main findings were about the contexts and processes in using LS. Here the importance of collaborative practices was evident and other processes, such as reflective practices, the intensive focus on learning and the facilitators' role (the 'knowledgeable other'). These align with other ideas and models about what underlies LS practice more generally (Lewis, Perry and Hurd 2004).

However, there was much less reference to 'limited positive outcomes'. This is important as there could be a strong interest amongst those who do these LS evaluations to show that LS is effective in some ways, with risk of a confirmation bias. This relates to the third and least prominent of the higher level finding themes, which was about limitations and challenges in LS use.

Implications for future use of LS for inclusive teaching of students with SEN and future research and development

These parallel reviews of LS and LS related practices to enhance inclusive teaching show the extent of their evaluated use in contemporary international research published in the English language. The reviews also show that these professional development practices have been evaluated across school settings and phases of schooling for students with varied kinds of SEN or disabilities and in pre-service and continuing professional development phases.

However, there is scope for much more use and evaluation of these practices in pre-service teacher training and education with a specific focus on inclusive teaching. There is also much potential for extending these practices to other areas of SEN and disabilities beyond cognitive and learning difficulties and to curriculum areas beyond maths, literacy and science teaching programmes. Teaching students with SEN in mainstream inclusive settings is challenging and lesson study and related practices have the potential to respond to these experiences through professional development practices designed to enable teachers to enhance their affective responses and motivation for teaching in these settings.

But these implications depend on institutional conditions in schools and training programmes being supportive of LS and related practices, leadership support at school and nation levels, funding to release teachers for this intensive practice and adequate preparation in the relevant theory and practice to undertake this kind of professional development activity. Sustaining LS and related practices is challenging (Dudley et al. 2019). The funding and organisation of demonstration projects that underpin so much of the research evaluations reviewed in this paper are hard to sustain beyond the project. How to establish systems that can support and sustain LS is a contemporary concern and challenge for the field.

Making the case for adopting such collaborative reflective practices also depends on further high quality research and development work. These reviews show the low level use of experimental evaluation designs that compare LS with other kinds of practices. What is needed are combined methodological approaches, that cover both fixed generalising designs, involving control or comparison conditions (such as quasi

experimental designs and carefully designed controlled trials), as well as in-depth case studies and flexible intervention designs (such as action research and design-based research).

The contemporary interest and uptake of LS shows the continuing commitment in education and teacher professional development to approaches which recognise that teaching involves collaborative pedagogic reflective practice. LS is a modern reflection of these historic ideas that act as a counter to the overly technical views about teaching and learning. But, LS as an enterprise with its flexible procedures and collaborative reflective practices also has the potential to provide a basis for a professional accountability (Corcoran 2009), which has particular relevance to the teaching of students with SEN and disabilities.

The list of Lesson Study and Lesson Study related titles and abstracts are available at <http://www.lessonstudysend.co.uk/resources/>

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	Purpose			Setting					Team/Group			School Phase				Evaluation							SEN Area				Curriculum Area		
	Teacher Professional Development			Curriculum Development	Pupil Learning	Primary	Secondary	Special Setting		Teachers	Specialist	Professional	Early Years	Primary	Secondary	Methodology				Focus			Cognitive Learning	SEMH	Language Communication	Sensory	Maths	Literacy	Other
Benedict (2013)		Y	Y	Y	Y	Y			Y				Y							Y	Y						Y		
Emerson (2016)		Y					Y		Y			?	?			Y				Y		Y						NS	
Kikkawa (2013)	Y	Y	Y		Y			Y		Y			Y				Y	Y			Y						Ski		
Messiou (2016)		Y	Y			Y			Y		Y		Y				Y		Y	Y	Y	Y					NS		
Mutch-Jones (2012)		Y		Y		M			Y	Y	Y		M			Y	Y			Y	Y	Y					Sci		
Norwich (2015)		Y	Y		Y	Y			Y		Y		Y			Y	Y		Y	Y	Y	Y					Y		
Norwich (2016)		Y				Y	Y				Y	Y	Y			Y				Y						Y			
Norwich (2018)		Y				Y	Y	Y		Y	Y	Y	Y	Y		Y			Y	Y		Y				Y			
Roberts (2018)		Y	Y		Y	Y	Y	Y		Y	Y	Y	Y	Y	Y					Y	Y		Y				NS		
Saito (2015)		Y				Y			Y				Y				Y				Y						NS		
Schipper (2017)	Y					Y			Y		Y		Y				Y		Y		Y						NS		
Schipper (2018)	Y					Y			Y		Y		Y				Y	Y	Y	Y		Y					Y		
Simón (2018)		Y	Y			Y			Y				Y				Y				Y					Y	Y		
Towaf (2016)		Y	Y		Y	U	U	U	U	Y	Y		Y	Y	Y	Y		Y			Y	Y	Y				Y		
Totals	3	12	7	2	4	5	9	4	2	11	5	8	2	8	11	1	1	4	9	2	6	11	9	9	1	2	0	3	2

Key. O/V=Overview, A/M = Attitude/Motivation, T=Teacher, i/vs=interviews, Y=Yes, U=Unclear, ?=probably yes (included as yes in totals), , M=Middle School (included in Secondary totals), Ski=Skills,Sci=Science, NS=Not stated

Lesson Study related reflective practices (1-28)	Reflective practice approach					Focus		Setting			Team/Group			School phase			Evaluation					SEN Area				Curriculum Area										
																	Methodology			Focus																
	Problem Solving Group	Prof. learn comm	Action research	Prof. collab	Teacher Coaching	Co-teach	Teacher Action	Inclusive Practice	Subject Prog	Primary	Secondary	Special setting		Teachers	Spec Teachers	Professionals	Early Years	Primary	Secondary	Tertiary	Overview	Case study(s)	Survey i/v	Experiment	Context	Processes	Outcomes	Cog. learning	SEMH	Lang. comm	Sensory	Maths	Literacy	Other		
Unit/ cl												School	Y																						Y	Y
Ae-Hwa (2006)					Y				?				Y	Y			Y	Y				?			Y	Y	Y							Y		
Ainscow (2006)			Y	Y			Y		Y	Y			Y	U	Y		Y	Y				Y			Y	Y									NS	
Anderson (2015)				Y			Y		Y				PT	PT			Y			Y				Y	Y										NS	
Bentley-Williams (2017)				Y			?		U	U			PT	PT	Y		Y	Y			Y				Y	Y										NS
Bonati (2018)				Y		Y		Y		Y			Y	Y					Y			Y&			Y	Y	Y									Art
Brendle (2017)					Y		Y	Y	Y				Y	Y			Y				Y				Y		Y					Y	Y			
Brusca-Vega (2014)			Y	?		Y	Y	?	Y	Y	Y		Y	Y	Y		Y	Y			Y			Y	Y			Y							Sci	
Cantu (2015)					Y		Y		Y	Y							Y	Y						Y	Y										NS	
Cavkaytar (2009)																											Y								SC	
Chan (2017)				Y				Y	Y				Y		Y		Y				Y				Y	Y			Y				Y			
Connell (2005)					Y		Y		Y	Y			Y	Y			Y	Y			Y															NS
Cook (2005)	Y				Y		Y		?	?	?	?	Y	Y	Y,Ot						Y				Y	Y	Y									NS
Crow (2003)			Y		Y	Y																														NS
Damore (2009)					Y		Y		Y				Y	Y								Y														NS
Drescher (2017)				Y			Y						PT						Y	Y		Y			Y										NS	
Du Chardt (1999)		Y					Y					U	Y						Y			Y			Y		Y								NS	
Duchaine (2011)				Y		Y	Y			Y			Y	Y	Y					Y			Y		Y	Y							Y			
Duke (2004)					Y								Y	Y						Y															Sci	
Embury (2012)				Y	Y			?		Y			Y	Y							Y				Y		Y								Sci	
Everett (2014)					Y		Y	Y		Y			Y	Y								Y			Y	Y	Y			Y	Y					
Faraclas (2018)				Y	Y		Y		Y	Y			Y	Y	Y		Y	Y					Y		Y	Y	Y								NS	
Fenty (2012)					Y				U	U			Y	Y			U	U		Y					Y	Y	Y	Y						Y		
Fontana (2005)					Y		Y			Y			Y	Y					Y						Y	Y	Y						Y	Y		
Forey (2012)			Y	Y				Y		Y					Y,Ot							Y			Y	Y	Y							Y		
Friedland (2003)	Y					Y					?		Y				Y	Y				Y			Y										NS	
Friend (2010)					Y		Y		Y	Y			Y	Y			Y	Y						Y	Y	Y									NS	
Friend (2015)				Y	Y				Y	Y			Y	Y			Y	Y			Y														NS	
Gerber (1999)					Y		Y		Y	Y			Y	Y			Y	Y	Y			Y				Y	Y								NS	

	Reflective practice approach					Focus		Setting			Team/Group			School phase			Evaluation						SEN Area			Curriculum Area									
																	Methodology			Focus															
	Problem Solving Group	Prof. learn comm	Action research	Prof. collab	Teacher Coaching	Co-teach	Teacher Action	Inclusive Practice	Subject Prog	Primary	Secondary	Special setting	Teachers	Spec Teachers	Professionals	Early Years	Primary	Secondary	Tertiary	Overview	Case study(s)	Survey i/v	Experiment	Context	Processes	Outcomes	Cog. learning	SEMH	Lang. comm	Sensory	Maths	Literacy	Other		
											Unit/ cl																								
Gettinger (1999)			Y	Y			Y	Y				Y	Y	Y	Y						Y			Y	Y										NS
Grenier (2017)				Y				Y	Y			Y	Y							Y				Y											PE
Hamilton-Jones (2013)				Y			y		Y	Y	Y		*			Y	Y				Y			Y	Y										NS
Hardy (2010)		Y		Y							Un	U						Y			Y&			Y	Y										NS
Healy (2014)				Y	Y		Y	Y		Y		Y		Y							Y					Y		Y	Y	Y					
Henning (2002)				Y			Y		Y			Y	Y								Y			Y											NS
Hoppey (2004)					Y		Y	Y				PT				Y								Y	Y										NS
Hughes (2013)				Y			Y	Y	Y				Y			Y	Y				Y	Y		Y		Y							Y		
Hunt (2004)				Y			Y		PS			Y	Y	Y,O	Y						Y&			Y	Y	Y									NS
Im (2015)				Y			Y	Y	Y			Y	Y			Y					Y			Y	Y	Y		Y							Sci
Jitendra (2002)				Y			Y	Y	Y			Y	Y			Y	Y		Y					Y	Y	Y									NS
Jobling (2004)				Y				Y			Y	PT					Y				Y					Y							Y		
Jones (2008)					Y				M			Y	Y			Y	Y				Y			Y		Y									NS
Kaiyatos (2015)					?							PT																							DS
Kleyn (2014)				Y	Y		Y	Y	Y			PT		Y		Y	Y				Y			Y		Y		Y							DS
Knackendoff (1996)	Y			Y			Y	Y		Y		Y	Y						Y																NS
Kohler-Evans (2006)					Y		Y	Y		Y		Y	Y				Y				Y	Y		Y	Y										NS
Krüger (2010)					Y		Y	Y				Y	Y	Y		Y					Y			Y	Y										NS
Levine (1997)					Y		Y		Y			Y	Y				Y				?			?	?	Y									NS
Lundblom (2012)	Y			Y	Y		Y	Y	Y				P	Y		Y	Y				Y			Y								Y			SC
Lyons (2016)				?			Y	Y				Y	Y			Y					Y			Y	Y										NS
Magiera (2006)			Y		Y		Y	Y				Y	Y			Y					Y	Y		Y											NS
Manrique (2019)																																	Y		
McLaughlin (2002)					Y		Y		?			Y	Y			Y	Y				Y														NS
Mombourquette (2014)		Y					Y		Y			Y		Y			Y				Y			Y	Y								Y		
Nevin (2002)			Y	Y			Y		PS,	Y		Y			Y	Y	Y				Y			Y		Y									Sk
Osipova (2011)				Y	Y		Y	Y					Y	Y		Y					Y			Y				Y					Y		

	Reflective practice approach					Focus			Setting				Team/Group			School phase			Evaluation						SEN Area				Curriculum Area							
																			Methodology			Focus														
	Problem Solving Group	Prof. Learn comm	Action research	Prof. collab	Teacher Coaching	Co-teach	Teacher Action	Inclusive Practice	Subject Prog	Primary	Secondary	Special setting	Unit/ cl	School	Teachers	Spec Teachers	Professionals	Early Years	Primary	Secondary	Tertiary	Overview	Case study(s)	Survey i/v	Experiment	Context	Processes	Outcomes	Cog. Learning	SEMH	Lang. comm	Sensory	Maths	Literacy	Other	
Panayiotis (2008)		Y	Y				Y		Y					Y								?	?	?		Y									NS	
Parker (2010)					Y		Y					Un		PS	PS	Y							Y&												NS	
Patton (2015)				Y					Y			Y in P		Y		Y							Y&			Y	Y	Y					Y			
Rainforth (1997)				Y			Y		Y	Y				Y	Y	Y					Y				Y	Y	Y								NS	
Rice (2007)					Y		Y		Y					Y	Y							Y			Y	Y	Y								NS	
Rimpola (2014)					Y		Y	Y		Y				Y	Y								Y			Y	Y					Y				
Rivera (2014)					Y		Y		Y	Y				Y	Y								Y			Y	Y								NS	
Roach (2006)	Y			Y	Y		Y		Y	Y	Ot			Y	Y	Y							Y		Y	Y	Y								NS	
Robinson (2017)		Y	Y				Y		Y&P					Y,P		Y	Y						Y		Y	Y	Y								NS	
Simmons (2008)					Y		Y			Y				Y	Y											Y						Y				
Solis (2012)				Y			Y		Y	Y	Y			Y	Y					Y						Y	Y								NS	
Stanovich (1996)				Y			Y		Y	Y				Y	Y	Y&										Y	Y	Y								NS
Strogilos (2012)				Y	Y		Y		Y					Y	Y	Y							Y			Y		Y	Y							NS
Tobin (2005)					Y	Y	Y		?					Y								Y				Y	Y	Y					Y			
Tragoulia (2013)			Y	Y			Y				Y			Y	Y	Y							Y&			Y										NS
Vaughan (2016)					Y				Y	Y				Y	Y	Y							Y			Y		Y	Y							NS
Vitalaki (2018)		Y	Y	Y				Y	Y					Y	Y	Y											Y									Sk
Vostal (2019)				Y			Y			Y				Y	Y								Y			Y	Y	Y					Y			
Waldron (1999)				Y			Y		?					Y	Y											Y										NS
Waters (2007)					Y		Y	Y				Un		PT	PT	Y	Y	Y	Y				Y			Y	Y	Y								NS
Whinnery (1995)									Y			Y		Y	Y												Y	Y								NS
White (1992)					Y		Y		?											Y						Y		Y								NS
Wilson (2005)																																				NS
Xin (2018)				Y				Y	Y					Y	Y	Y							Y			Y	Y	Y					Y			
Zindler (2009)			Y				Y		Y					Y	Y								Y&			Y	Y	Y	Y	Y	Y					NS
Totals	5	6	12	34	14	41	4	55	18	46	37	4	6	65*	57*	28	5	49	47	3	13	12	43	3	12	63	42	32	4	8	2	10	12			

*Totals include PS. Key. Prof Learn Comm=Professional Learning Community, Prof Collab=Professional Collaboration, Prog=Programme, i/vs=interviews, Cog=Cognitive, Lang Comm=Language Communication, cl=class, Y=Yes, U=Unclear, ?=probably yes (included in totals),

FS=Preschool, F=Primary, M=Middle School, U=University, O=Other, O=Observation, FT=Preservice Teachers, UL=University Lecturer, NS=Not specified, Education, Sci=Science, SC=self-care, PE=Physical Education, DS=Disability studies, SC=Social Communication, Sk=Skills