Professional Learning and/ or Development (PL): Principles and Practices
A Review of the Literature

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Summary: Professional Learning (PL): Principles and Practices

This literature review focuses on the principles and practices within professional learning (PL). The literature is "partial in its coverage, is fragmented and is under-theorised" (Kennedy, 2014, p. 689). Current gaps in this review of reviews include reviews based on longitudinal studies showing impact and sustainability of PL over time; reviews of teacher identity and PL; reviews considering the 'complex theory of teacher learning-practice' to inform PL design, implementation, and evaluation, which Strom & Viesca (2021) argue 'is nothing short of an ethical imperative' (p. 209). Nevertheless, this review offers some key learnings and insights for consideration. Please note the term 'teacher' applies to those working in the range of educational settings: early childhood education and care (ECEC), primary and post primary.

- The terms CPD, 'professional development' and 'professional learning' (PL) are often used synonymously. However, this review intentionally uses 'professional learning' (PL) to account for professional development experiences, activities, workshops, or programmes that teachers in early childhood settings and schools engage with that may lead to teacher PL (Boylan et al., 2018; King, 2014). In this way PL is an outcome from engaging with professional development (Liou and Canrinus 2020). Therefore, PL is not something that is "done" to teachers (Timperley et al., 2007, p. 233), rather it involves teachers as active participants responsible for their own learning (Labone and Long, 2016). PL can be formal (arising from professional development workshops, courses…) or informal (for example, on-the-job learning from social interactions with others) (Spillane et al., 2011). This range of PL aligns with the Cosán Framework for teachers' learning (Teaching Council, 2016) and reflects the key elements of teacher agency and autonomy, collaborative and reflective practice for transformative learning outlined in Kennedy's (2014) models of PL (Table 1). This could allow for adherence to the recommendations in the context of ECEC for a national infrastructure and quality assurance (Department of Children, Equality, Disability, Integration & Youth [DCEDIY], 2022).

- The factors that shape teacher learning and practice are not neutral and need to be explored (Strom & Viesca, 2021). Kennedy's (2014) framework of analysis for understanding the purpose of various PL models (see Table) and for understanding aspects of the Irish policy context at the micro, meso and macro levels against perspectives on professionalism in the Irish context (see Table 2) should be explored by those planning PL. Adopting any PL model uncritically and applying it as "policy borrowing rather than policy learning" is cautioned (Jones, 2021, p.197).

- The reviews point to core design features of PL for consideration: content focus; active learning; collective participation; coherence; and duration (Desimone, 2009). Additional reviews call for a focus on participants' needs, the role of external providers and specialists, and leadership for PL (Cordingley et al., 2015b), models of effective practice, coaching and expert support, and feedback and reflection (Darling-Hammond et al., 2017). However, they stress the importance of conceptualizing teacher learning as a "complex system rather than as an event" (Opfer & Pedder, 2011, p. 378) to understand which core features work, when, where and why (Desimone & Garet, 2015). An exploration of Strom & Viesco's (2021) framework of teacher learning (Table 3, King et al., 2022) would provide some key understandings and suggestions for th complex nature of teacher learning-practice. Teacher learning-practice is often thought of as "linear and process-product driven" (Strom and Viesco, 2021, p. 209) when in reality much evidence points to the need to consider various mediating factors and influences, for example, between the teacher, practice, students and external stimuli (Clarke and Hollingsworth, 2002), the PD programme/activity, support, and teacher agency (King, 2014, 2016),

teacher identity, understanding change processes and wider social forces (Boylan et al., 2018).

- Missing from the reviews is an emphasis on empowering teachers (King, 2019) to understand and navigate this, pointing to the need for consideration of empowerment to support teachers to implement change at the individual, community, and organizational level (Ruechakul et al., 2015). This requires an understanding of the relationship between the individual teacher, the school/organisation and the activity or design of the PD experience (Lee et al., 2020; Opfer & Pedder, 2011) reflecting the importance of the situated nature of teacher learning and understanding change (King & Holland, 2022).

- The core design features of PLPL/D are evident in the reviews focused on the practices of professional development PL/D where there is a significant focus on teacher learning as being socially constructed through collaborative practices (Dille & Rokenes, 2021; Eisenschmidt & Niglas, 2014; He et al., 2020; Lantz-Andersson et al., 2018; Lefstein et al., 2020; Saifuddin & Majbrit, 2016; Vangrieken, et al., 2016), including but not limited to, teacher networks, teacher communities, collaborative inquiry, peer observation/coaching, research-practice partnerships (school- university), communities of practice (DCEDIY, 2022), coaching and mentoring. Central to collaborative practices is the importance of trust and respect and creating a climate of openness, dialogue, and taking risks. Missing from the reviews is 'How' to do this.

- Planning and evaluating PL leads to improved teacher learning/outcomes, child/student outcomes, and the learning of others (King, 2014; Philipsen et al., 2019; Schachter, 2015; Snyder, 2012). Teacher learning is not linear and evaluation models need to account for the situated, complex, and contextual nature of teacher PL (Boylan et al., 2018; Rawdon et al., 2020). The reviews point to a framework for guiding choices of tools for evaluation of PL.

- The role of online/blended learning (OBL), which has been accelerated by COVID-19, has likely changed teacher PL forever (Bragg et al., 2021). Reviews highlight the potential of online communities of practice (Dille & Rokenes, 2021; Lantz-Andersson et al., 2018; Saifuddin & Majbrit, 2016), use of social media and video analysis for teacher PL. Drawing from multiple resources to inform designs with innovative formats for PL has been highlighted for ECEC (Schachter, 2015).

- Continued investment in high-quality PL opportunities is important. Structured planning and recording time allocated to PL (DCEDIY, 2022), or release time and space for teachers to meet and to discuss their work and that of their students (De Luca et a., 2014; Ridge & Lavigne, 2020) along with time for planning change (Cordingley et al., 2015b) has been stressed. This reflects previous calls, in the Irish context, for time for critical reflection and time for learning (Sugrue, 2011). Time alone however will not suffice, as change may appear technically simple but is socially complicated (Fullan, 2015). The importance of the complexity of teacher learning-practice cannot be underestimated. The 'how' to plan for change and 'how' to empower or motivate teachers to plan for change is not evident in the reviews.

Recommendations

Adopt the term 'professional learning' (PL) to account for teacher learning that may arise from the range of professional development experiences, activities, workshops or programmes that teachers in schools and early childhood settings engage with (Boylan et al., 2018; King, 2014). PL can be formal (arising from professional development workshops, courses…) or informal (arising from on-the-job learning from social interactions with others…) (Spillane et al., 2011). PL is not something that is "done" to teachers (Timperley et al., 2007, p. 233); it is an outcome from teachers actively engaging with professional development. The Cosán framework for teachers' learning (Teaching Council, 2016) aligns with this understanding of teachers' PL and reflects the key elements of teacher agency and autonomy, collaborative and reflective practice which are necessary for transformative learning (Kennedy, 2014). PL should be considered as a continuum, where a teacher's own professional knowledge develops as the teacher moves through several learning stages of their career (Huberman, 1988), ultimately aiming towards leading to leadership in teaching and learning (Poekert, 2012). However, teacher's learning will vary according to their relationship with their ECEC setting, school and community context (Opfer and Pedder, 2011) (*Pillar 2: Teachers and ECEC PL Pillar 3: School and ECEC leadership*)

Policy makers should engage with Kennedy's (2014) framework of analysis for understanding aspects of the Irish policy context at the micro, meso and macro levels, against perspectives on professionalism in the Irish context to ensure alignment between the two (see Table 2, King et al., 2022). Professional developers and all those involved in planning PL should also engage with Kennedy's (2014) framework of analysis for understanding the purpose of various PL models (see Table 1 King et al., 2022). (*Pillar 2: Teachers and ECEC PL*; *Pillar 3: School and ECEC leadership*)

In line with the Looking at Our School policy framework (DES, 2022), school leadership and management should 'develop leadership capacity' (p.14) by "empower[ing]teachers to take on leadership roles and to lead learning" (p. 41). Empowering teachers to become teacher leaders to support the PL of colleagues (Muijs et al., 2014; Sebastian, Allensworth, & Huang, 2016) and influence others to implement change at the individual, community, and organisational level (Ruechakul et al., 2015) is central to developing PL cultures in settings and schools and also reflects the concept of teacher agency that features prominently in the NCCA's Primary Curriculum Framework (2020). Establishing a Leadership for PL course/programme ought to be considered to equip teachers with the necessary leadership skills to lead the PL of others (Audisio et al., 2022) and to address issues such as power inequalities identified by Nguyen (2021) linked with situated and contextual PL. Noteworthy also is the importance of developing social capital by "creates[ing] and motivates[ing] staff teams and working groups to lead developments" in PL (DES, 2022, p.41), to be responsible for leading PL and understanding and supporting the complexity and contextually situated nature of teacher learning (Opfer & Pedder, 2011) and teacher learning-practice (Strom & Viesca, 2021) (Table 3). Collaborative cultures are seen as a cornerstone for implementing and sustaining new practices for school improvement (King, 2014, 2016). Leadership for PL needs to account for the relationship between the individual teacher, the school/organisation and the design of the PL experience (Lee et al., 2020; Opfer & Pedder, 2011) whilst also understanding which of the core features of effective PL (outlined in the summary and full report) work, when, where and why (Desimone & Garet, 2015).

A focus on planning and evaluating PL to improve teacher learning, child/student outcomes, and the learning of others (King, 2014; Philipsen et al., 2019; Schachter, 2015; Snyder, 2012) should occur at all levels of the system. Teacher learning is not linear and evaluation models need to account for the situated and contextual nature of teacher PL (Boylan et al., 2018). Rawdon et al., (2020) in the Irish context along with other researchers (see full report by King et al., 2022) point to a framework for guiding choices of tools for planning and evaluating teacher PL. Of importance here is that some frameworks reflect a linear pattern of teacher learning and solely focus on establishing cause and effect between professional development experiences and teacher PL and student outcomes, whilst forgetting the important affective element in teacher PL (King, 2014). For example, planning and evaluation frameworks of PL need to account for the cognitive, emotional, and social involvement of teachers (Liou & Canrinus, 2020) in the PL process for change. emotional (fear, anxiety, motivation, excitement, expectations), self-efficacy and other affective aspects (attitudes, beliefs, reflections, and values) aspects of teacher and leaders' learning as these have been shown to directly influence teachers' and leaders' engagement with PL and cognitive and behavioural outcomes arising from the PL (King, 2014; OECD, 2020; Rawdon et al., 2020). Planning and evaluation frameworks of PL need to account for the cognitive, emotional, and social involvement of teachers (Liou & Canrinus, 2020) in the PL process for change. (*Pillar 2: Teachers and ECEC PL; Pillar 3: School and ECEC leadership*)

Endorse PL practices that consider the contextually situated and socially constructed nature of teacher learning through collaborative practices, for example, the 'infinite potential' of school university research-practice partnerships (He et al., 2020) where researchers and practitioners engage in long-term problem-solving reciprocal collaboration. Teacher communities (Vangrieken et al., 2016) and collaborative inquiry (De Luca et al., 2014) or collaborative action research are recommended to open practice and engage in critical dialogue. However, creating effective learning climates, supporting democratic social interactions and facilitation are key components to support effective communities of practice (Holland, 2018). (*Pillar 2: Teachers and ECEC PL; Pillar 3: School and ECEC leadership*)

Recognise that online/blended learning (OBL), which has been accelerated by COVID-19 has likely changed teacher PL forever (Bragg et al., 2021). Embrace the potential of online communities of practice (Dille & Rokenes, 2021; Lantz-Andersson et al., 2018; Saifuddin & Majbrit, 2016), use of social media and video analysis for teacher PL. (*Pillar 2: Teachers and ECEC PL; Pillar 3: School and ECEC leadership*)

Continue to invest in high-quality PL opportunities to support the design and approaches to PL in a bottom-up manner to meet contextual needs and allow for 'local, innovative and creative' approaches, potentially led by Education and Training Boards (Fitzpatrick, 2018, p. 10), Education Centres and/or schools and early childhood settings. Provide structured planning and recording time for PL (DCEDIY, 2022), or release time and space for teachers to meet and to discuss their work and that of their students (De Luca et al., 2014; Ridge & Lavigne, 2020) along with time for planning and reflecting on change (Cordingley et al., 2015a). Structured time and space for collaborative learning has been shown to impact positively on students' test scores and outcomes (Liou & Canrinus, 2020) B5.1 Principles and Practices

B5.1 Principles and Practices

Introduction

This literature review focuses on the principles and practices of professional learning (PL) in the context of schools and early childhood settings. The terms continuing professional development (CPD), 'professional development' (PD) and 'professional learning' (PL) are often used synonymously. However, this review intentionally uses 'professional learning' (PL) to account for professional development experiences, activities, or programmes that teachers engage with that may lead to teacher 'professional learning' (Boylan et al., 2018; King, 2014). We use the term 'teacher' to apply to those working in the range of educational settings: early childhood education and care (ECEC), primary and post primary. PL is not something that is "done" to teachers (Timperley et al., 2007, p. 233), rather it may occur from active experimentation, reflection and engagement with PD and as such reflects an outcome of PD (Liou and Canrinus, 2020). PL involves teachers as active participants responsible for their own learning (Labone and Long, 2016). It can be formal (arising from professional development workshops, courses…) or informal (for example, on-the-job learning from social interactions with others) (Spillane et al., 2011). Regardless, PL ought to empower teachers (King, 2019) individually, as a team, at school/organization level and as a community (profession) (Ruechakul et al., 2015) to apply their learning in their own contexts (Cordingley et al., 2015a) and to meet the needs and values of the teachers and the system at the micro, meso and macro levels (Sugrue, 2011). This understanding of PL aligns with the Teaching Council's definition of CPD which "refers to life-long teacher learning and comprises the full range of educational experiences designed to enrich teachers' professional knowledge, understanding and capabilities throughout their careers" (2011, p. 19). This review of reviews responds to the following research question. See the Appendix for the research strategy and tabulation of results.

Research Question

What reviews or meta-analyses have been conducted that are relevant to the area of continuous professional development / learning: principles and practice across the education system?

Principles

Three themes for discussion have emerged from the reviews: core features of effectivePL, complexity of teacher learning, and planning and evaluating PL.

Core Features of Effective PL/D

Three reviews were identified related to formal PL (Cordingley et al., 2015b; Darling Hammond et al., 2017; Lindvalla & Ryve, 2019), two to informal learning (Kyndt et al., 2016; Lecat et al., 2020), and three related to online/blended learning (OBL) (Bragg et al., 2021; Lee et al., 2021 & Philipsen et al., 2019). Darling Hammond et al., (2017) identify seven design features of effective PL that improve teaching practice and student learning: content focus; active learning; supports collaboration; uses models of effective practice; provides coaching and expert support; offers feedback and reflection; and is of sustained duration. While these primarily reflect Desimone's (2009) five core features generally accepted as orthodoxy in many countries (content focus; active learning; collective participation; coherence; and duration), they also emphasize the importance of models of effective practice, coaching and expert support, and feedback and reflection. Meanwhile Cordingley et al., (2015a, p. 10) highlight a strong evidence base for eight design features for effective PL to impact on student achievement. While five of these broadly reflect those identified by Darling-Hammond et al., (2017) and Desimone's (2009) consideration of participants' needs, the role of external providers and specialists, and leadership around PL should be noted. However, Lindvalla and Ryve (2019) question the consensus view about Desimone's core features of PL pointing to issues including where the evidence is derived from, sustainability of impact, varying effects on student achievement and how the terms or features 'have been applied and defined in different ways' (p. 141). Their review of the core feature of 'coherence' revealed different conceptualizations across studies e.g. coherent with internal or external factors or creating coherence with predetermined or negotiated goals. Many of the studies in the above reviews are conducted in the U.S. where the emphasis is on teachers as implementers of 'what works' in PL (Lindvalla & Ryve, 2019). However, nothing works everywhere (King, 2020) so a focus on understanding which features work, when, where and why is crucial (Desimone & Garet, 2015). This is also important for online/blended learning (OBL) which has been accelerated by COVID-19 and likely changed teacher PL   forever (Bragg et al., 2021). Philipsen et al., (2019) identified six synthesised features related to OBL:

1. supportive environment for OBL;
2. acknowledgement of the existing institutional context, including leadership and finance;
3. address teacher change with transition to OBL;

4. clear goals, procedures and content tailored to teachers' needs;
5. activities associated with effective professional development e.g. reflective practice, active learning, and collaborative learning and;
6. dissemination of knowledge about OBL and evaluation of PL.

Bragg et al. (2021) echo many of the above principles and call for online programme facilitators, technical support, and the provision of asynchronous (e.g., discussion boards or activities) and synchronous activities. Overall, these principles mirror six of the seven highlighted by Darling-Hammond et al., (2017) and Cordingley et al.,'s (2015a) leadership and responding to teachers' needs. While Lee et al., (2021) also draw special attention to course design, access to support, and opportunities for interaction, they equally highlight the importance of providing time for learning and understanding teachers' motivation to learn. In the context of ECEC there is particular emphasis on the role of PL in developing professional practice due to the diversity of qualifications among other challenges (Rogers et al., 2019). The need to draw on established core features and practices of effective PL from all areas of education along with creating a means of evaluating PL in ECEC was emphasized (Schachter, 2015). See French and Lake (2022) for some detail on the required literacy and numeracy content of PL in ECEC. In the context of ECEC, work is underway in Ireland to achieve the First Five (2019-2028) commitments related to the ECEC workforce, including a national programme of PL opportunities (Ireland, 2018). Overall, it is evident that the reviews attest to the complexity of teacher learning.

Complexity of Teacher Learning

Opfer & Pedder (2011, p. 377) argue that teacher learning is complex and cannot be separated from the "complex teaching and learning environments in which teachers live". They contend that the above design features may operate differently in terms of intensity and in different contexts. Instead, they call for a focus on "causal explanation so that we understand under what conditions, why, and how teachers learn" (p. 378). Findings reveal "three overlapping and recursive systems involved in teacher professional learning: the individual teacher, the school, and the activity" (p. 384). These need due consideration to mediate teacher learning and teacher change which were noted as core features of effective PL, in formal PL (Opfer & Pedder, 2011), informal learning (Kyndt et al., 2016), and OBL (Philipsen et al., 2019). An exploration of Strom & Viesco's (2021) framework of teacher learning (see Table 3) would provide some key understandings and suggestions for the complex nature of teacher learning-practice.

Table 3: A complex framework of teacher learning-practice (Strom & Viesca, 2021, p. 216).

Shift	Implications for Teacher Learning-Practice
From Dualism to Immanence	• Learning and teaching practice are entangled processes • These processes occur via connections and interactions with multiple other human, non-human, and intangible elements.
From Individuals to Multiplicities	• Teaching activity is not done by an individual, but is highly mediated activity actively negotiated with/in a larger multiplicity of factors. • The teacher herself is a multiplicity of which her learning is a part.
From Autonomous to Collective and Distributed Agency	• The entire collective contributes to the production of teaching activity. • Agency is collectively enacted and distributed among the multiplicity, although not necessarily equally.
From Human-Centred to Human-and	• Teaching is shaped not just by human actors but also by non-human/material and discursive factors.
From Neutral and Universal to Political and Situated	• The factors that shape teaching are not neutral, but connected up to specific, situated political, cultural, historical, and material conditions and power flows, which requires attending to micropolitical interactions.
From Being to Becoming (Different)	• Teaching and learning are vital and ongoing processes that are constantly changing as different elements in teaching assemblages come into composition and develop/transform in relation to all other elements of an assemblage. • Teaching is emergent phenomena, or becomings, that are a joint, temporal product of a teaching-assemblage. • Teacher development is a non-linear activity that occurs not as a stable trajectory but as a series of 'becomings' – temporal realisations of teacher-self, instances of learning, and/or practice events that occur as 'thresholds' within a larger ongoing process of 'becoming different'.
From Sameness to Difference	• Because teaching is a collective product produced by the joint activity of heterogeneous elements, instances of learning-practice are necessarily hybrid. • The reigning characteristic of teacher learning-practice is difference.

This report recommends a focus on leadership for professional learning to support the complex and contextual nature of individual and organizational learning, to understand the complexity of teacher learning-practice (Strom & Viesca, 2021), and to focus on the learning processes and conditions necessary for supporting teacher learning-practice. This could be done in line with the Looking At Our School policy framework (DES, 2022) which states that school leadership and management should 'develop leadership capacity' (p.14) by "empower[ing]teachers to take on leadership roles and to lead learning" (p. 41). Empowering teachers to become teacher leaders to support the PL of colleagues (Muijs et al., 2014; Sebastian, Allensworth, & Huang, 2016) and influence others to implement change at the individual, community, and organisational level (Ruechakul et al., 2015) is central to developing PL cultures in schools and reflects the concept of teacher agency that features prominently in the NCCA's Primary Curriculum Framework (2020).

To address the complexity of teacher learning, Lee et al. (2020) focussed specifically on optimising user engagement in response to the attrition rate on online courses. Three levels of support were identified to enable engagement (organisational, design of the programme and the individual), mirroring Opfer and Pedder's (2011) focus on the educational setting, the activity,

and the individual teacher. Lee et al., (2020) focus on the learners themselves (prior experiences, personality traits, intrinsic motivation for enrolling on the online course and perceived usefulness) as these are likely to influence the degree to which they engage with the PD experience. The importance of antecedents was also noted in the reviews on informal PL; learning that is either individual or collective, happening either intentionally or unintentionally, deliberately, or implicitly (Kyndt et al., 2016; Lecat et al., 2020). Lee et al. (2020) also draw attention to other influences on OBL; learners' technological self-efficacy, ease of navigation of online platforms, perception of course material and usefulness to the learner. The reviews clearly emphasize the importance of conceptualizing teacher learning as a 'complex system rather than as an event' (Opfer & Pedder, 2011, p. 378) to help understand which of the core features of effective PL work, when, where and why (Desimone, 2015). This calls for a consideration of PL at the "micro context (individual teachers or individual activities or programmes) ...meso (institutional) and macro (school system) contexts" as teacher learning is closely connected to the other levels of the system (Opfer & Pedder, 2011, p. 378-9). In considering the role of the meso context in PL five studies were identified that focused on the following areas: inclusive education (Brock et al., 2017), multicultural/intercultural education (Parkhouse et al., 2019; Romjin et al., 2020 & Vass et al., 2019) and rural education (Reagan et al., 2019). While some of the features identified above were evident here again it was noted that the research base is insufficient to clearly identify the particular features of PL which effectively impact teacher outcomes and classroom practices in each context (Brock et al., 2017; Reagan et al., 2019; Rogers et al., 2019; Romjin et al., 2019; Vass et al., 2019). Nevertheless, some additional key themes emerged across the contexts to inform key principles in PL. For example, Brock et al., (2017) noted the importance of implementation fidelity in implementing evidence-based practices with children with disabilities. Meanwhile, Parkhouse et al. (2019) recorded that approaches sometimes resulted in superficial and simplistic inclusion of minority figures or cultures without recognising the power differentials that accompany cultural difference. The importance of 'culturally sustaining pedagogy' (p. 417) *has* been developed to emphasise that marginalized cultures and communities must be actively maintained, not merely accommodated, and that cultures are both complex and fluid (Paris & Alim, 2017). Similarly, Vass et al., (2019, p. 341) call for PL practices to ensure that Indigenous peoples contribute to leading activities to meaningfully critique deficit views "through the alignment of curriculum, pedagogy and context". This alignment is echoed in the context of rural education with calls to consider online PL to reach teachers in rural locations (Reagan et al., 2019).

Planning and Evaluating PL

The importance of evaluation of PL has been highlighted in the above reviews (Philipsen et al., 2019; Schachter, 2015) and in the Irish policy context (DES, 2011, 2017, 2018). Four additional reviews relevant to evaluation of formal PL will be explored (Boylan et al., 2018; Garrett et al., 2019; Perry et al., 2019; Rawdon et al., 2020). Boylan et al. (2018) focus on five evaluation models (Clarke & Hollingsworth, 2002; Desimone, 2009; Evans, 2014; Guskey, 2002; Opfer & Pedder, 2011) while Rawdon et al. (2020) focus on seven models (Clarke & Hollingsworth, 2002; Compen et al., 2019; Desimone, 2009; Guskey, 2002; King 2014; Merchie et al. (2018); Soebari & Aldridge, 2015). Boylan et al. (2018) state that the models differ in terms of the theories of learning underpinning them (e.g. social constructivist or cognitive), agency in the learning process, scope, and philosophical foundations. The authors offer a framework to support the choice of a suitable evaluation model for the context and purpose in hand, arguing that no one model can be applied universally. Likewise, Rawdon et al. (2020) highlight commonalities and differences across the models showing how some view impact in a hierarchical, linear manner and others a cyclical manner, with only some valuing contextual and individual factors that mediate the degree of impact of engagement with PL. Findings here also stress the importance of the core features of PL for evaluation as distinct from delivery or activity type. However, they also consider a focus on Kennedy's (2014) models of PL (Table 1) as an alternative to a focus on core features of PL for evaluation purposes. Rawdon et al. (2020) are developing a set of guiding principles for designing an evaluation model aimed at being universally applicable and suitable for teachers, leaders, and system leaders alike (p. 114).

While the need for quality assurance has been identified at the macro level, many high performing education systems are not basing quality assurance of PL on a formal process (Perry et al., 2019). Typically practices and processes are influenced by the context and wider system within countries, for example, Cosán (TCI, 2016). Perry et al. (2019, p. 36) suggest two broad models of quality assurance which may be suitable for the England context; "kite mark and professional recognition". Each has different purposes, features, processes, and costs and benefits. Traditionally evaluation looked at teacher satisfaction with increasing emphasis now turning to impact on teacher practices and student outcomes, with the latter being described as challenging and expensive to do (Rawdon et al., 2020). This linear path for teacher learning (for example, Desimone (2009); Guskey (2002); Merchie et al., 2018) typically reflects a reductionist input output approach to teacher PL. Instead, Opfer and Pedder's (2011) cyclical model acknowledges the complexity of the relationship between teacher PL and practice and the school reflecting Strom & Viesca's (2021, p. 209) argument that adopting a 'complex turn'…'is nothing

short of an ethical imperative'.

Boylan et al. (2018) also stress the lack of sufficient attention to the situated nature of PL in the models explored. Rawdon et al. (2020) commend Compen et al.'s (2019) model that considers contextual factors and King's (2014, p. 103) model that highlights the importance of 'systemic factors' to mediate the impact of PL on teacher and learner outcomes. While these systemic factors reflect some of the core features of PL, they are also recommended for planning PL (See example Rawdon et al., 2020, p. 32). Planning PL requires determining the expected outcomes/goals at the start is considered by Guskey (2002) and Merchie et al., (2018). Both reviews highlight the importance of planning PL for improving learner outcomes for teachers as well as students (Boylan et al., 2018; Rawdon et al., 2020). Other challenges referenced in the reviews are the lack of attention to collaboration or the social dimension of learning (Boylan et al., 2017) and the collaborative reflection on impact of PL on student outcomes (Rawdon et al., 2020), both of which are endorsed in Cosán (TCI, 2016) and reflect an acknowledgment of the importance of individual and organizational learning and a collective responsibility or accountability for student learning. Soebari and Aldridge (2015, p. 16) include "student perceptions of the learning environment as a measure of the effectiveness of TPL". The lack of attention to the collaborative nature of learning has implications for evaluating models of collaborative PL such as communities of practice and may be indicative of how PL is typically conceptualised as programmes and courses for individual teachers. However, Rawdon et al. (2020) reference the Borko (2004) and King (2014) models as acknowledging the importance of collaboration and specifically mentions the aspect of cultural change and diffusion of practices to others in King's (2014) model, something which Philipsen et al., (2019) highlighted as a core feature in OBL PL. Finally, Boylan et al. (2018) argue that none of the models consider teacher identity, which arguably influences teacher engagement with PD and teacher practices, something which was highlighted in the reviews on core features of PL. The affective element of teacher PL needs further exploration in evaluation models (King, 2014). For example, emotions (fear, anxiety, motivation, excitement, expectations), self-efficacy, and other affective aspects (attitudes, beliefs, reflections, and values) of teacher and leaders' learning as these have been shown to directly influence teachers' and leaders' engagement with PL and cognitive and behavioural outcomes arising from the PL (King, 2014; OECD, 2020; Rawdon et al., 2020). Planning and evaluation frameworks of PL need to account for the cognitive, emotional, and social involvement of teachers (Liou & Canrinus, 2020) in the PL process for change.

While the above relates to formal PL, approaches to measuring teachers' informal learning are considered by Lecat et al., (2020). Rawdon et al. (2020) point to the Cosán framework as potentially relevant for evaluation of teachers' informal learning. They also draw on the work of the Centre of School Leadership (2019) in relation to PL stressing the importance of recognising that 'not all learning for leadership is "programmatic" and that the criteria need to be broad enough to encompass the evaluation of different types of learning activities, including those that are bespoke and/or local' (p. 30). Overall, the reviews point to consideration of the complexity of teacher learning and evaluation whilst offering help in choosing suitable models as tools for evaluation and planning PL.

Practices

Darling Hammond et al. (2017) highlight the importance of models of effective practice as a core design feature. Examples of models linked with various purposes are highlighted by Kennedy (2014), noting that collaborative professional inquiry models which allow for increased professional autonomy and teacher agency are most likely to be transformative (Table 1). This autonomy regarding choice of PL reflects the vision within Cosán which seeks to promote a culture of PL focused on teacher engagement with PL with particular emphasis on PL that supports socially situated constructivist practice, collaborative and reflective practice.

Table 1. Spectrum of CPD models (adapted).

Purpose of Model		Examples of models of CPD which may fit within this category
Transmissive		Training models
		Deficit models
	Increasing capacity for professional autonomy and teacher agency	Cascade model
Malleable		Award-bearing models
		Standards-based models
		Coaching/mentoring models
		Community of practice models
Transformative		Collaborative professional inquiry models

Given that educational change may appear technically simple but is socially complicated (Fullan, 2015) it is not surprising that the review of PL practices points to a significant emphasis on collaborative models of PL. This section will consider effective models of collaborative practice and the increasing use of social media and video analysis for PL. Finally, it will focus on the purpose of PL and an interrogation of the underpinning

perspectives of PL.

Socially Situated Constructivist Practice

The reviews argue that practices should consider the contextually situated and socially constructed nature of teacher learning through collaborative practices, including but not limited to, teacher networks (Eisenschmidt & Niglas, 2014), teacher communities (Vangrieken, et al., 2016), collaborative inquiry (De Luca et al., 2014), peer observation / coaching (Ridge & Lavigne, 2020), research-practice partnerships (school-university) (He et al., 2020), teacher collaborative discourse (Lefstein et al., 2020), communities of practice (DCEDIY, 2022 and coaching (Elek & Page, 2019). Collaborative networking may facilitate teacher understanding of change and the need for change (Eisenschmidt & Niglas, 2014). Teacher communities range from formal, member-oriented with a pre-set agenda, to formative teacher communities (Vangrieken et al., 2016). Different stakeholders at various levels of the system may be involved in these communities with some being formed from the bottom up and some from the top down, which impacts the practices within the communities (Vangrieken et al., 2016). Addressing potential power inequalities linked with situated and contextual PL is important (Nguyen, 2021). Their success is dependent on supportive leadership, facilitation, group dynamics and composition, and trust and respect. Equipping teachers with leadership skills to facilitate and lead PL is important (Audisio et al. 2022) and ought to be considered in terms of teachers being able to access such PD experiences, programmes, or courses.

There is a need for a climate of openness and teachers' willingness to open their practice (Vangrieken et al., 2016), 'expand the dialogue' (Owen, 2014, p. 2) have challenging and constructive discussions, and feel safe to take risks (Garrison, 2016; Vangrieken et al., 2016) as learning is mediated through discourse (Lefstein et al., 2020). Moving beyond a sharing of experiences to meaningful collaboration and conversations requires norms and structures of active learning and inquiry to be established in advance (Garrison, 2016; Lefstein et al., 2020). The potential of collaborative inquiry which engages educators in collaboratively investigating focused aspects of their professional practice by exploring student responses to instruction, leading to new understandings and changes in classroom teaching was explored by De Luca et al. (2014). Such collaborative inquiry into practice can support teachers in evaluating the efficacy of particular interventions and practices. Collaborative Inquiry cycles connect areas for PL to personal practice and experiences through a process of dialogical sharing, taking action, and reflection. Reflection on the rationale for change is central to implementation of and sustainability of change (Cordingley et al., 2015b). While Lefstein et al. (2020) generally agree that teacher professional conversations can play a critical role in teacher PL, they caution that the

empirical research is relatively diffuse, both theoretically and methodologically and that what works in one context may not in another because goals as well as conditions vary.

The 'infinite potential' of research-practice partnerships where researchers and practitioners engage in long-term problem-solving reciprocal collaborations aimed, in part, at increasing the capacity of personnel in local schools and communities to manage and use educational data for improvement is highlighted by He et al. (2020, p.13). They argue that boundary crossing collaborations in such partnerships offer an opportunity to prioritize and reflect on equity issues inherent in educational research and practice through bridging the often-disparate worlds of researchers and practitioners. They suggest approaches to support these partnerships intentionally focused on investigating problems of practice and identifying solutions. Partnerships such as coaching are affirmed as a development tool for PL (Kraft et al., 2018). Despite pointing to challenges of taking coaching programmes to scale while maintaining effectiveness, the review discusses ways to address these challenges

Nguyen, (2021) points to the benefits of peer observation of teaching for PL in terms of understanding of disciplinary content and pedagogic strategies, initiating and maintaining reflection of teaching practices, and its ability to de-isolate teachers. However, he outlines a number of concerns and criticisms against peer observation, for example, power inequalities, and calls for practices to be aligned with each specific teaching context rather than strictly follow cut-and-dried procedures so that peer observation can be 'truly a blessing in professional development' (p.18). Building on this, four reviews attest to the value of video analysis for teacher PL, providing greater access to practice than observation.

Video Analysis and Social Media

Morin et al. (2018) state that technology captures the complexity and richness of the everyday classroom practice of teaching, is authentic, encourages focussed examination and discussion of practice, supports analysis and reflection and can provoke emotional, cognitive and motivational processes, deepen understanding of teaching actions and allow for engagement in more sophisticated pedagogies. Major & Watson, (2018, p. 63) also evidence the value of video analysis for teachers "particularly for watching a video of their own teaching". However, they call for "high-quality support... to realise its transformative potential in supporting in-service teachers and in improving classroom practice" (Major & Watson, 2018, p.65). A core theme in each of the systematic reviews is the poor methodological quality of several studies and inability to generalise findings (Morin et al., 2018), the lack of focus on how video-analysis impacts on student's learning (Major & Watson, 2019), the variation in studies (Gazdag, Nagy & Szivák,

2019) and that published studies have not provided enough detail about the processes involved (Baecher et al., 2018). Key implications for practice are outlined by Baecher et al. (2018): the requirement for teacher leadership in video analysis of teaching; PL of coaches/mentors in facilitation of video analysis; experimentation with facilitation processes in online environments, for example, participants in different locations while simultaneously online to promote face-to-face benefits but within distance learning; inclusion of learner/student perspective.

More recently there is a growing literature around online teacher communities both formally organized and informally developed (Lantz-Andersson et al., 2018). While these may address different needs amongst teachers and support different outcomes, they also share several common characteristics. Of note is the need for scaffolding of learning within these communities, a move towards a common understanding between teachers about the communities, and communities to be responsive to teachers' interests and needs (Dille et al., 2021). The use of IT platforms to support online communities of practice were endorsed in the review by Saifuddin et al. (2016) who also noted their potential for intercultural exchanges. Staying with the OBL, Greenhow et al. (2020, p. 2) refer to the evolving use of social media across platforms, including Pinterest, Twitter, Facebook, and Instagram, "to help teachers collaborate with one another to inform and improve their knowledge and classroom teaching" including enhancing student engagement, community connections, and teacher–student interactions. However, they caution this is not without challenges. While the literature on PL principles and practices is useful "there is an imperative that theoretical literature can be seen as 'theory in context'" (Kennedy, 2014, p. 690) "to impact on practice and to interrogate policy" (p. 696).

Purpose of PL and an Interrogation of the Underpinning Perspectives of PL.

Kennedy argues for a focus on the purpose of various PL practices (Table 1) and an exploration of the 'context within which CPD [PL] systems are developed... and the underpinning perspectives on professionalism that serve to shape the development of individual countries'... PL policies (p. 694). Given the importance of context it is imperative to analyse PL policies against perspectives on professionalism in the Irish context to see how they align with the overall stance on professionalism (Kennedy, 2014, p. 695). (See Table 2).

Table 2. Analysis of aspects of CPD policies against perspectives on professionalism.

CPD policy aspect[a]	Managerial perspective on professionalism[b]	Democratic perspective on professionalism[c]
Overall purpose	Deficit (to remedy weaknesses)	Developmental (enhancing specific strengths and interests)
Unit of focus	Individual	Collective
Teacher engagement with policy	Compliance with policy directives	Contribution to policy development and considered enactment of policy directives
Dominant underpinning perspective on teacher learning	Behaviourist (instrumental learning)	Social constructivist
Focus of learning	Development of technical, role-focused knowledge and skills	Acknowledgment and articulation of values and beliefs that inform, support or inhibit acquisition and application of knowledge and skills
Motivation	Externally imposed	Internally driven
Accountability	Measured against externally prescribed standards	Measured against context-specific and negotiated desirable outcomes

Notes: [a]Features of policy that can be analysed against perspectives on professionalism.
[b]Teacher as a compliant, efficient worker.
[c]Teacher as change agent and proactive advocate of social justice.

Caution against policy borrowing is highlighted with a call for policy learning instead (Jones, 2021). It is hoped that Kennedy's (2014) analysis here will provide a starting point for understanding the Irish policy context at the micro, meso and macro levels with a view to impacting on PL/C principles and practice.

Conclusions and Recommendations

This chapter explored the principles and practices of PL, following a review of reviews, in a bid to offer recommendations for policy and practice. Noteworthy is the limitations of this approach as many reviews focus on 'what works' in PL with less understanding of when, where, why and how it works (Desimone & Garet, 2015) to account for the complexity of teacher learning and practice (Strom & Viesca, 2021). Kennedy (2014) argued that the state of literature on teachers' PL is "partial in its coverage, is fragmented and is under-theorised" (p. 689). Arguably this is still the case and while there are some important key learnings and insights offered from this review of reviews that have advanced the literature since then it is essential to consider what is missing from these reviews. For example, there is a gap related to: reviews based on longitudinal studies showing impact and sustainability of PL over time; reviews of teacher identity and PL; reviews considering the 'complex theory of teacher learning-practice' to inform PL design, implementation, and evaluation, which Strom & Viesca (2021, p. 209) argue 'is nothing short of an ethical imperative'. The importance of adopting a 'complex turn' to PL is reflected in a double special issue on this topic in the highly ranked journal *Professional*

Development in Education in 2021.

To begin acknowledging the complex theory of teacher learning-practice the term 'professional learning' (PL) should be adopted to account for the range of professional development experiences, activities, or programmes that teachers in early childhood settings and schools engage with that may lead to teacher 'professional learning' (Boylan et al., 2018; King, 2014) as professional learning is not something that is "done" to teachers (Timperley et al., 2007, p. 233), instead it may happen through active experimentation, reflection and engagement with PD (Labone and Long, 2016). In this way PL is an outcome from engaging with professional development (Liou and Canrinus 2020). PL can be formal (arising from professional development workshops, courses…) or informal (for example, on-the-job learning from social interactions with others) (Spillane et al., 2011). This range of PL aligns with the Cosán (Teaching Council, 2016) framework for teachers' learning.

A recommended starting point for analysing current and future PL principles and practices is the adoption of Kennedy's (2014) framework of analysis for understanding the Irish policy context at the micro, meso and macro levels (Tables 1 and 2) as the factors that shape teacher learning and practice are not neutral and need to be explored (Strom & Viesca, 2021). The key elements of teacher agency and autonomy, collaborative and reflective practice for transformative learning outlined in Kennedy's framework reflect those in Cosán, pointing to its suitability in the Irish context for consideration of principles and practices at all levels of the system for all those working in a range of educational settings. This could allow for adherence to the recommendations in the context of ECEC for a national infrastructure and quality assurance (Department of Children, Equality, Disability, Integration & Youth (DCEDIY), 2022). The reviews point to core design features of PL for consideration: content focus; active learning; collective participation; coherence; and duration (Desimone, 2009). Additional reviews call for a focus on participants' needs, the role of external providers and specialists, and leadership for PL (Cordingley et al., 2015b), models of effective practice, coaching and expert support, and feedback and reflection (Darling-Hammond et al., 2017). While core features of effective PL have been identified, the reviews stress the importance of conceptualizing teacher learning as a "complex system rather than as an event" (Opfer & Pedder, 2011, p. 378) to understand which core features work, when, where and why (Desimone & Garet, 2015).

Missing from the reviews is the emphasis on empowering teachers (King, 2019) to understand and navigate the complexity of PL, pointing to the need for consideration of empowerment to support teachers to implement change at the individual, community, and

organizational level (Ruechakul et al., 2015). This requires an understanding of the relationship between the individual teacher, the school/organisation and the activity or design of the PD experience (Lee et al., 2020; Opfer & Pedder, 2011) emphasizing the importance of the situated nature of teacher learning and understanding change (King & Holland, 2022). An exploration of Strom & Viesco's (2021) framework of teacher learning (Table 3) would provide some key understandings and suggestions for the complex nature of teacher learning-practice. Additionally, a critical theory lens might be useful in addressing issues such as power inequalities identified by Nguyen (2021) linked with situated and contextual PL.

A focus on evaluating and planning PL is recommended to improve teacher learning/ outcomes, child/student outcomes, and the learning of others (King, 2014; Philipsen et al., 2019; Schachter, 2015; Snyder, 2012). Evaluation models differ in terms of the theories of learning underpinning them (e.g. social constructivist or cognitive), agency in the learning process, scope (focus on teacher outcomes and/or student outcomes), and philosophical foundations (Boylan et al., 2018). Teacher learning is not linear and evaluation models need to account for the situated and contextual nature of teacher PL (Boylan et al., 2018; Rawdon et al., 2020). Systemic factors (King, 2014) to support PL are highlighted, for example the role of leadership, the importance of collaboration for teacher learning and the role of teacher identity in PL. Planning and evaluation frameworks of PL need to account for the cognitive, emotional, and social involvement of teachers (Liou & Canrinus, 2020) in the PL process for change. Adopting such a 'complex turn' is considered an ethical imperative to avoid perpetuating inequalities in education (Strom & Viesca, 2021, p.209). While there is currently no universal model for evaluation of teacher PL the reviews point to a framework for guiding choices of tools for evaluation of PL. Adopting any model uncritically and applying it as "policy borrowing rather than policy learning" is cautioned (Jones, 2021, p.197).

Reviews focused on the practices of PL revealed a significant focus on teacher learning as being socially constructed through collaborative practices (Lantz-Andersson et al., 2018; Dille & Rokenes, 2021; Eisenschmidt & Niglas, 2014; Saifuddin & Majbrit, 2016; Lefstein et al., 2020; Vangrieken, et al., 2016) including but not limited to, teacher networks, teacher communities, collaborative inquiry, peer observation / coaching, research practice partnerships (school- university), communities of practice (DCEDIY, 2022) and coaching. Central to all the collaborative practices is the importance of trust and respect and creating a climate of openness, dialogue, and taking risks. 'How' to do this was not explained in the reviews.

The role of online/blended learning (OBL), which has been accelerated by COVID-19, has likely changed teacher PL forever (Bragg et al., 2021) and therefore warrants due consideration when planning PL. Reviews highlight the potential of online communities, use of social media and video analysis for teacher PL. Key insights for OBL were outlined with a particular emphasis on addressing teacher change in the transition to OBL, providing time for learning and understanding teachers' motivation to learn (Lee et al., 2021; Philipsen et al., 2019). Drawing from multiple resources to inform designs and experiment with innovative formats for PL has been highlighted for ECEC (Schachter, 2015). Continued investment in high-quality PL opportunities that focus on children's learning outcomes (Rogers et al., 2019) is important. While investment should be top-down, the design and approaches to PL should be bottom up to meet contextual needs and allow for 'local, innovative and creative' approaches, arguably led by Education and Training Boards in the Irish context (Fitzpatrick, 2018, p. 10). Structured planning and recording time allocated to PL (DCEDIY, 2022), or release time and space for teachers to meet and to discuss their work and that of their students (De Luca et a., 2014; Ridge & Lavigne, 2020) along with time for planning change (Cordingley et al., 2015b) has been stressed. Structured time and space for collaborative learning has been shown to impact positively on students' test scores (Liou & Canrinus, 2020). The 'how' to plan for change and 'how' to empower or motivate teachers to plan for change is not evident in the reviews. Time for critical reflection and time for learning has been highlighted in the Irish context (Sugrue, 2011). "If CPD at the level of the school [and ECEC settings] is to gain more traction, the issue of time will have to be tackled since there is no release time from teaching, but neither are teachers obliged to remain in school after official closing time" (Sugrue, 2011, p. 808). Time alone will not suffice, as change may appear technically simple but is socially complicated (Fullan, 2015). The importance of the complexity of teacher learning-practice cannot be underestimated.

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Dr Geraldine French *is an Associate Professor, Head of School of Language, Literacy and Early Childhood Education (ECE), Programme Chair of the Master of Education in ECE at the Institute of Education, DCU and Senior Fellow of Advance HE (SFHEA). Geraldine was commissioned to undertake reviews of literature on the key elements of professional practice in relation to children under three years by the National Council for Curriculum and Assessment and reviews underpinning both national frameworks Aistear and Síolta which focus on ECE. She has published extensively in the areas of quality professional practice in ECE, early literacy, numeracy, speech, language and more recently relational pedagogy with babies.*

Clare Halligan *is an Assistant Professor in the School of Language, Literacy and Early Childhood Education (LLECE), Dublin City University (DCU). Clare is a former primary school principal, member of the Irish Principals Network (IPPN) and mentor on the Centre for Schools Leadership, (CSL) programme. She is a Board member on the National Council for Curriculum and Assessment and is part of the team implementing the literature review to support the updating of Aistear, the Early Childhood Curriculum Framework (NCCA, 2009). Clare is a field worker with the Children in Schools Lives (CSL), National Longitudinal study with University College Dublin (UCD) since 2018.*

Appendix Research Strategy and Tabulation of Results.

Research Question

What reviews or meta-analyses have been conducted that are relevant to the area of continuous professional development / learning: principles and practice across the education system?

Key Search Terms

Ebsco Education Research Complete

 DE: "CAREER development" OR D E "TEACHER development") OR (DE "COMPULSORY continuing education" Limiters: Scholarly (Peer Reviewed) Journals; Published Date: 20110101-20211231; Language: English *13,197*

TEACHER development OR continuing professional development OR professional learning OR Professional development OR in-service training OR teacher education OR professional development features OR professional design Or professional development principles Or professional development characteristics Or professional development effects OR professional development forms OR professional development impact OR effective professional development OR professional development models OR professional development approaches **(search title, abstract and keyword fields as an OR search) 42,986**

Combine search 1 & 2 with OR 48,557

S3 AND TI (meta-analysis or systematic review OR meta-review OR international review OR research synthesis OR best evidence 5.

S3 AND AB (meta-analysis or systematic review OR meta-review OR international review OR research synthesis OR best evidence

Combine search S4 & S5 with OR 549

Run search 6 with NOT: health or medical or care; Or preservice teachers or student teachers or pre-service teachers or prospective teachers or teacher candidates or initial teacher education 248

Scopus

1."Professional Development" OR "Career Development" OR "Professional Training" OR "Lifelong Learning" OR "Professional Continuing Education" Limiters: Scholarly (Peer

Reviewed) Journals; English Language, Subject Social Sciences, Published Date: 20110101-20211231; Language: English **3630**

2.”TEACHER development” OR “continuing professional development” OR “professional learning” OR “Professional development” OR” in-service training” OR “teacher education” OR “professional development features” OR “professional design” Or “professional development principles” Or “professional development characteristics” Or “professional development effects” OR “professional development forms” OR “professional development impact” OR “effective professional development” OR “professional development models” OR “professional development approaches” (**search title, abstract and keyword fields as an OR search**)1148

3. RUN search 2 “meta-analysis” or systematic review” OR “meta-review OR international review OR “research synthesis” OR “best evidence” Limiters education 200

4.Search within search 3 with title “meta-analysis” or systematic review” OR “meta-review OR international review OR “research synthesis” OR “best evidence” **12**

5. Search within search 3 with abstract “meta-analysis” or “systematic review” OR “meta-review OR “international review” OR “research synthesis” OR “best evidence” **0**

6.Run within Search S1 “title” “meta-analysis” or systematic review” OR “meta-review” OR “international review” OR “research synthesis” OR “best evidence” **121**

7.Run within Search S 1 “Abstract” “meta-analysis” or systematic review” OR “meta-review OR “international review” OR “research synthesis” OR “best evidence” **73**

8.Combine searches S6, S5 & S4 (#10 AND #9 AND #8) 17

9.Combine Searches #10 AND #9 AND #8 manually 206

EPSCO ERIC

1 .DE "Professional Development" OR DE "Career Development" OR DE "Professional Training" OR DE"Lifelong Learning" OR DE "Professional Continuing Education" Limiters:Scholarly (Peer Reviewed) Journals; Published Date: 20110101-20211231;Language: English 9,296

2. 'TEACHER development' OR 'continuing professional development’ OR ‘professional learning’ OR ‘Professional Development ‘OR ‘in-service training’ OR ‘teacher education’ OR ‘professional development features’ OR ‘professional design’ Or ‘professional development principles’ Or ‘professional development characteristics’ Or ‘professional development effects’ OR ‘professional development forms’ OR professional development impact’ OR ‘effective professional development’ OR ‘professional development models’ OR ‘professional development approaches’(search title,abstract keyword fields KW as an OR search) 31,333

4. Combine search 1 & 2 with OR 37,722

5. S3 AND TI ("meta-analysis" OR"systematic review" OR "meta-review" OR "international review" OR "research synthesis" OR "best evidence".) 115

6. S3 AND AB ("meta-analysis" OR "systematic review" OR "meta-review" OR "international review" OR "r research synthesis" OR "best evidence".) 189

7. Combine search S4 & S5 with OR 236

8. Run search 6 with NOT: "health or medical" or "care" Or "preservice teachers "OR "student teachers "OR "pre-service teachers "OR "prospective teachers" OR "teacher candidates" or "initial teacher education" 189

Google Scholar (all limited by 2011 onwards)

1. *allintitle: teacher professional development review OR meta-analysis OR synthesis OR systematic 68*
2. *allintitle: teacher professional learning review OR metaanalysis OR synthesis OR systematic review 22*
3. *allintitle: continuing professional development review CPD OR teaching OR teacher OR teachers OR systematic review OR meta-analysis 25*
4. *anywhere in the article:* professional development review OR professional learning review OR metaanalysis OR synthesis OR systematic review author:Philippa author:Cordingley 23
5. *anywhere in the article:* professional development review OR professional learning review OR metaanalysis OR synthesis OR systematic review author:Christopher author:Day 96
6. *anywhere in the article:* professional development review OR professional learning review OR metaanalysis OR synthesis OR systematic review author:Opfer author:Pedder 9
7. *anywhere in the article:* professional development review OR professional learning review OR metaanalysis OR synthesis OR systematic review author:Darling-Hammond author:Hyler 8
8. professional development review OR professional learning review OR metaanalysis OR synthesis OR systematic review author: Garet 27
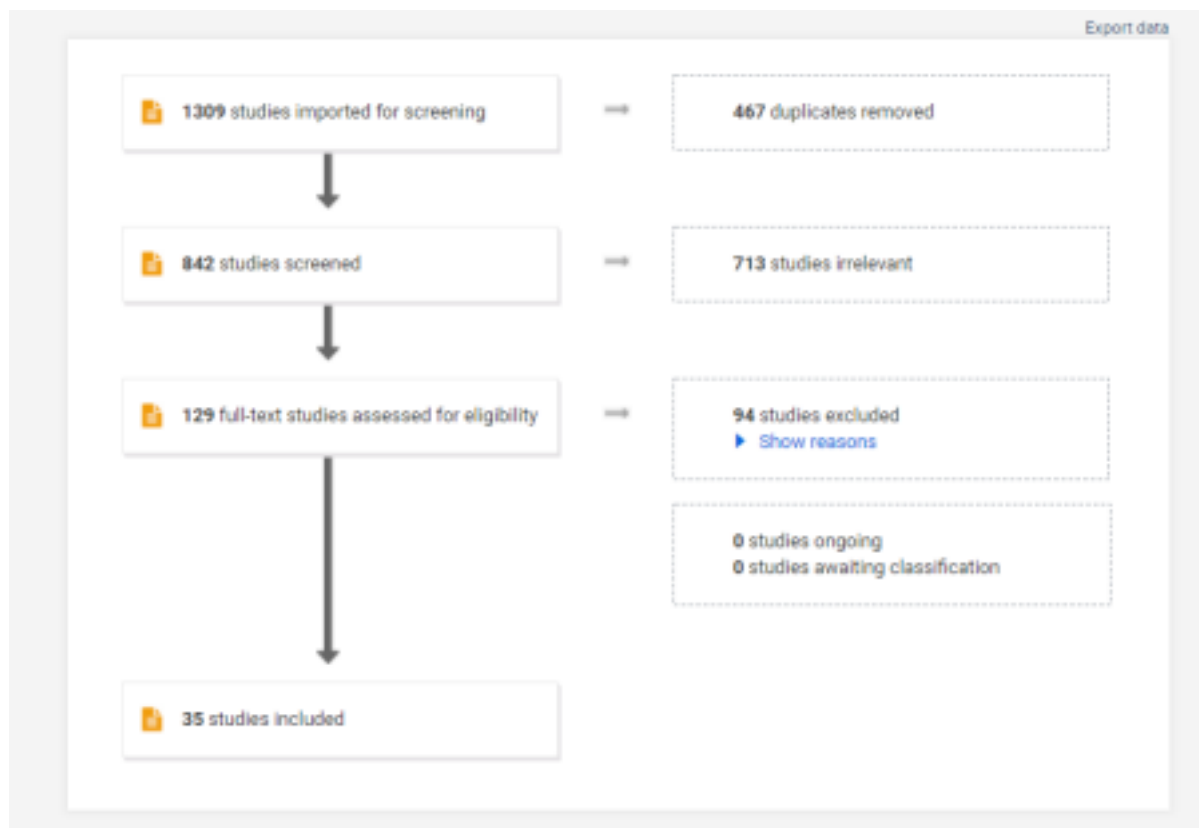
Key Data Sources Consulted

- SCOPUS, ERIC, Education Research Complete
- Google Scholar
- Handbooks in the field published since 2011
- 'Grey literature'

Inclusion Criteria	**Exclusion Criteria**
Professional learning	book review
Professional development	health
In-service	medical or care
Training	student teachers
Teacher education	pre-service teachers
Continuing professional development	prospective teachers
Continuous professional development	teacher candidates
CPD	initial teacher education
Professional Learning Communities	medicine
Experiential Learning	patient
Mentoring	healthcare
Coaching	sport
Systematic review	retention
Systematic literature review	student teacher
Meta-analysis	finance
Research synthesis	pre 2011
Evidence base(d)	
Best evidence	
Rapid evidence	
Systematic review	
Systematic literature review	
Meta-analysis	
Research synthesis	
Evidence base(d)	
Best evidence	
Rapid evidence	
Early Years	
Early Childhood	
Early Childhood settings	
Primary	
Post primary	
DEIS	

Prisma Chart

Export data

1309 studies imported for screening → 467 duplicates removed

842 studies screened → 713 studies irrelevant

129 full-text studies assessed for eligibility → 94 studies excluded
▶ Show reasons

0 studies ongoing
0 studies awaiting classification

35 studies included

Tabulation of Results:

Review	Number of studies	Effect size (If available)	Principles and practices	Age range	Finding
Baecher, L., Kung, S.C., Ward, S.L., & Kern, K. (2018).	34		Facilitating video analysis	Early childhood, elementary and secondary school	A need for more practitioner leadership in video analysis of teaching (rather than university faculty). Professional development of supervisors/coaches is important. A need for more experimentation with facilitation processes online with facilitation that involves learner perspectives and feedback. Video analysis is just unfolding.
Bragg, L.A.,Walsh, C., & Heyeres, M. (2021).	11		Online Professional Development in COVID	K-12	Successful design elements: accommodated individual differences in learning types; fostered participant engagement; provided learner supports; acquisition of content; practical learning activities; application in practice; and are flexible, relevant and goal oriented.
Brock, M.E., Cannella-Malone, H. L., Seaman, .L., Andzik, N.R, Schaefer, J.M, Page, E.J., Barczak, M.A., & Dueker, S.A. (2017).	118	Mean d-Hedges-Pustejovky-Shaish effect size was $d = 2.48$	Contexts: Practitioner Training Studies in Special Education	3 – 19 + years	Significant associations between implementation fidelity and modelling, written instructions for implementation, and verbal performance feedback.
Cordingley, P., Higgins, S., Greany, T., Buckler, N., Coles-Jordan, D.,	46		Principles and Practices		Professional development opportunities that are carefully designed and have a strong focus on pupil outcomes have a significant impact on student achievement. Eight design features are included

Crisp, B., Saunders, and Coe, R. (2015)					
Darling-Hammond D, L., Hyler, M.E., Gardner, M., & Espinoza, D. (2017).	35		Principles and practices		Positive link between teacher PD, teaching practices and student outcomes. Seven features of effective PD contribute to this. Conditions for effective PD. Redesign use of time for PL and provide flexible funding. Teacher 'experts' as mentors and coaches
DeLuca, C., Shulha, J., Luhanga, U., Shulha, L.M., Christou, T.M.& Klinger, D.A. (2015).	42		Inquiry		Theoretical articulations for Collaborative Inquiry as a professional learning structure for educators. Dialogical sharing, taking action and reflection are not stages unto themselves but, rather, three core components of CI that are inextricably linked by discreetly articulated stages. While researchers may differ in opinion as to when a component may dominate the cycle, the frequency with which these components manifest themselves in the literature leads us to believe that effective CI takes place at the nexus of dialogical sharing, taking action and reflecting.
Dille, K. B, & Rokenes, F.M. (2021).	52		Collaborative Networking		Online teachers professional Development (oTPD) was revealed as a complex process. Scaffolding became the overarching category. Four main concepts were revealed as central for scaffolding oTPD: The teachers, their contexts, the online programme, and facilitating a shared understanding.
Eisenschmidt, E, & Niglas, K. (2014).	187		Collaborative Networking		Networking facilitates the building of shared rules and trust. It enables access to local information, helping to create a common understanding of the aims and content of reform.

Garrett, R., Citkowicz, M. & Williams, R. (2019).	40		Implementation	K-12	No "silver bullet" to promote effective classroom practice. Individualized Pl/D (e.g., coaching) is beneficial. Active learning opportunities during 'training'. Help teachers use student data to inform their instruction. Short-cycle professional learning approaches can be effective when you include individualized PL/D and active learning.
Gazdag , E,. Nagy, K., & Szivák. (2019).	35		Use of Video Stimulated Recall (VSR) in Teacher Trainer	Not specified	VSR gains profound insight into novice teachers' reflective thinking mechanisms and beliefs, as well as the views that guide pedagogical work. VSR is used for reflecting on and reflecting in teaching practice. VSR enhances pedagogical thinking: decision-making, classroom behaviour early professional Experience linked to CPD. Teacher educators are able to offer emotional and task support during VSR sessions. Reflective dialogues can have a great impact on trainee teachers since it provides a safe environment for reflection.
Gegenfurtner, A. (2011).	148		Implementation		Motivation is relevant for learning and for transfer of learning Motivation is a complex phenomenon… shapes and is shaped by social and social-regulatory mechanisms in the training environment.
Greenhow, C., Galvin, S.M., Brandon, D.L., & Askatri, E. (2020).	58		Teacher learning with social media	K-12	Social media features benefit teachers to fulfil goals for classroom teaching: enhancing student engagement, community connections, & teacher–student interactions, (with challenges). Teachers' professional learning benefits within formal professional development programs & informal learning networks.

He, Y., Faircloth, B.S., Hewitt, K.K., Rock, M.L., Rodriguez, S., Gonzalez, L.M., & Vetter, A. (2020).	86		Model		Practice partnerships (RPPs) researchers and practitioners engage in long-term problem-solving collaborations.
Kraft, M., Blazar, D., & Hogan, D. (2018).	60		Model		This illustrates the challenges of taking coaching programs to scale while maintaining effectiveness.
Kyndt, E., Gijbels, D., Grosemans, I. and Conche,V. (2016).	72		Principles and Practices		Definition of teachers' informal learning. Antecedents for informal learning. Interaction between individual and organizational antecedents is key.
Lantz-Andersson, A., Lundin, M., & Selwyn, N. (2018).	52		Collaborative Networking		Online communities can be a valuable means of developing supportive and collegial professional practices.
Lecat, A., Spaltman, Y., Beausaert, S., Raemdonck,I., & Kyndt,E.(2020).	42		Principles and practices		Definition and features of teachers' informal learning proposed. Highlights the importance of informal learning processes for teacher's professional development. Combination of approaches to measurement of teachers' informal learning. Doesn't account for individual learning.
Lee, J., Sanders, T., Antczak,D., Parker, R., Noetel, M., Parker, P., & Lonsdale, C. (2021).	51 (narrative synthesis) 23 (meta-analysis		Influences on learners' engagement in online professional development optimizing user engagement.	Not specified	Course design, employers' provision of time to complete learning, learners' reasons for learning (e.g., intrinsic value and perceived usefulness), access to learning support, and opportunities for interaction during the learning experience.

Lefstein, A., Louie, N., Segal, A.& Becher, A. (2020).	64		Collaborative Networking		Teacher professional conversations can play a critical role in teacher learning on the job. However, empirical research on the topic is relatively diffuse, both theoretically and methodologically. This paper presents a review of articles about teacher team discourse and interaction. The review offers an overview of the field and analyses of studies' theoretical perspectives on teacher learning, methodological approaches to analyzing discourse, research and intervention designs, and emergent ideas and findings about generative discourse.
Lindvalla, J., Ryve, A. (2019).	95		Principle and practices		Focus on the core features of effective PL/D: coherence. PL/D coherent with internal, external factors or coherence with predetermined goals or negotiated with teachers. Teachers as implementers, autonomous or negotiators? Teachers are primarily seen as implementers of predetermined goals and practices.
Major, L., & Watson, S. (2018).	82		The state of the field in using video to support in-service teacher professional development: limitations and possibilities.	3-18 years	Video is effective when used as part of TPD. However, further qualitative and quantitative research is needed to identify *how* the use of video impacts on classroom practices.
Morin, K., Ganz, J.B., Vannest, K.J., Haas, A.N., Nagro, S.A., Peltier, C.J., Fuller,M.C., & Ura, S.K. (2018).	30	Tau-U 0.39 - 1	Video Analysis for PD for Special Educators A single-case review.	3-18 years	Video analysis is effective for changing the instructional practices of special educators and that it can be used across a variety of settings and with a diverse group of educators.

Nguyen, Q. N. (2021).	5		Model	N/A	The relationship between the observers and the observed staff based on their expertise can be reciprocal (Richards & Lockhart, 1991). Peer observation is truly a blessing in professional development.
Opfer, V. D., & Pedder, D. (2011).	Not available		Principles and practices	N/A	Recognition of the multi causal, multidimensional, and multi correlational quality of teacher learning. Consideration of the individual and school orientations to learning systems that mediate teacher learning and teacher change.
Parkhouse, H., Lu, C.Y., & Massaro, V.R. (2019).	40		Contexts: Professional development in Multicultural Education	Birth to 18 years	Too much variation in studies to draw conclusions about the factors that contribute to effectiveness of ME in PD. Further investigation of: how teachers navigate tensions or challenges arising from resistance to discussions of diversity and equity; locating the balance between providing specific knowledge about students' cultures and guarding against promoting stereotypes or broad generalizations and PD developers should examine their own theories about ME and teacher learning.
Perry, E., Boylan, M., & Booth, J. (2019).	50		Evaluation / Quality Assurance (E/QA)	N/A	In many high performing education systems, quality assurance (QA) of PL/D is not subject to a formal process. It is assumed rather than explicit. Propose two broad models of QA for teacher PL/D: kite mark and professional recognition. Need to consider the context within which the system exists.
Philipsen, B., Tondeur, J., Pareja Roblin, N., Vanslambrouck, S.,	15		Principles to underpin online & blended learning (OBL)	Children in pre-post primary education	1.Supportive programme & environment 2.Acknowledge context regarding OBL 3.Address teacher change with transition to OBL 4.Determine goals relevance of PD for OBL

& Zhu,C. (2019).					5. Acknowledge PD strategies in transition to OBL 6. Disseminate knowledge, about OBL and evaluate the TPD
Reagan, E. M., Hambacher, E., Schram, T., McCurdy, K., Lord, D., Higginbotham, T., & Fornauf, B. (2019).	59		Contexts: Rural teacher education	Not specified	Recommends rural teacher education that builds upon the complexities of particular places and fosters understanding of the significance of place in relation to broader contexts A contemporary paradigm for rural teaching refutes "deficit thinking about rural communities" and "embrace the assets of rural places
Ridge, B.L., Lavigne, A. L. (2020).	38		Models		Role of peer observation and feedback as a vehicle to move beyond high-stakes evaluation
Romjin, B.R, Slot, P.L., Leseman, P.P.M. (2020).	23 in-service papers and 21 pre-service		To evaluate the impact of the wider context and the use of reflection and enactment as facilitators of change to increase teachers' intercultural competences	Birth to 12	Embedded and contextual approach to professional development, in which reflection is guided and enactment is fostered, is most likely to increase teachers' intercultural competences. However, such an approach is still uncommon in the field of teacher support.
Rogers, S., Brown, Poblete, X. (2019).	24		Contexts: Early years education (The PLEYE Review)	Birth to six years	Approaches to PDL that report impact on outcomes for children in EYE. which combine coaching, with new knowledge and opportunities for reflection on practice, may be most effective. Evidence on duration, frequency and intensity of PDL, is inconclusive and requires further research.

Saifuddin, K., & Majbrit, H.S. (2016).	7		Collaborative Networking		The benefits of teachers' online Communities of Practice (CoPs). Informal knowledge sharing through CoPs can transform teachers by contributing to their immediate context or needs.
Snyder, P., Hemmeter, M. L., Meeker, K.A., Kinder, K., Pasia, C., & McLaughlin, T. (2012).	256		Contexts: Key Features of the Early Childhood Professional Development Literature	Birth to six years	Information about recipients, content focus & type of facilitated teaching and learning experiences provided. 74% included systematic follow-up; limited information provided about dose and fidelity of implementation of the follow-up. A descriptive characterization of the who, what, and how of early childhood PD is provided
Vangrieken, K., Meredith, C., Packer, T, & Kyndt, E. (2016).	40		Collaborative Networking		Teachers' communities play a vital role in Teacher Professional Development. Conditions for Success are: 1/Supportive leadership, 2/group dynamics and 3/composition, and trust and respect.
Vass,G., Lowe,K., Burgess, C., Harrison, N., Moodie,N.(2019).	31		Contexts: PLD research projects that aimed to make a positive change in schools to improve the learning experiences of Indigenous students Australia.	P-12 schooling	Future professional learning practices to ensure that Indigenous peoples contribute to leading PD activities, explicitly address issues to do with culture, (anti) racism, power and relationships in schooling, and localise the politics of knowledge construction through the alignment of curriculum, pedagogy, and context.