

Review

Transferring Results of Professional Development into Practice: A Scoping Review

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Abstract: The paper aims to map available evidence regarding the transfer of learning from professional development (PD) into practice. The scoping review is based on an analysis of the key characteristics of effective PD, drawing from 60 meta-analyses and various types of reviews (e.g., systematic, integrative, etc.) regarding PD both in general and in various professional fields published from 2009 to 2024. Three research questions are put forward: What characterises effective PD? Which theoretical concepts in the scientific literature represent the transfer of adult PD into practice? And what processes and indicators show effective ways of transferring PD and learning outcomes into practice? The methodology of the review is organised into three steps—preliminary study, the main study, and conceptualisation—by selecting publications and deriving concepts and conclusions relevant to the research questions, as well as identifying knowledge gaps for further exploration. The research literature uses various concepts to characterise the transfer of PD into practice as it is determined by different contexts, research traditions, and practices. Although effective PD has been defined and several theoretical models have been developed, research on PD effectiveness indicators and processes related to the transfer of PD into practice is still ongoing. However, not all evaluations take these models as bases to evaluate the existing PD practices, so the different indicators proposed by different researchers make it difficult to compare the results. The main problem is insufficient evidence in terms of measurable and comparable effectiveness criteria in all fields. The scoping review reveals a variety of controversial or incompletely researched aspects of transferring PD results into practice.

Keywords: professional development; professional learning; continuing professional development; transferring to practice; gap in knowledge



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1. Introduction

Professional development (PD) is crucial for both employees and employers. It enhances skills, competitiveness, and a commitment to lifelong learning. Studies have shown that employees who engage in upskilling or training are more likely to retain their jobs (Shiri et al., 2023).

Despite significant investments in employee training, a persistent challenge is the low transfer of PD into actual workplace practices. While extensive research has explored effective PD design, particularly for teachers and healthcare professionals (e.g., Sims et al., 2023; Basma & Savage, 2023; Darling-Hammond et al., 2017; Guskey, 2003; Dunst et al., 2015), a universally accepted framework for effective adult PD across all fields remains elusive.

Furthermore, although the rapid evolution of PD implementation strategies, driven by advancements in online learning as a result of the pandemic and blended learning, has created new challenges in PD, most research remains focused on transmissive PD models (Kennedy & Stevenson, 2023). This limits our understanding of how to effectively evaluate the impact of contemporary PD approaches.

Therefore, understanding PD and transferring the results of PD into practice by identifying both current research directions and limitations in new contemporary situations would help both researchers and practitioners to develop further the field of PD. So far, most of the research is about teachers and health workers and less about other professions; thus, we focus on all fields in our scoping review. This paper investigates both the conceptualisation of PD and identifies the measurable results (processes and indicators) in terms of PD outcomes and effects (e.g., Dunst et al., 2015). Thus, our study aims to map the available evidence regarding the transfer of learning from PD into practice. Based on a literature review, we aim to identify gaps in knowledge for further research by exploring three research questions: What characterises effective PD? Which theoretical concepts in the scientific literature represent the transfer of adult PD into practice? And what processes and indicators show effective ways of transferring PD and learning outcomes into practice?

2. Method

The current study focuses on published research regarding the transfer of PD results into practice. The scoping review draws on qualitative research of systematic reviews, meta-analyses, critical reviews, etc. (for the period 2009–2024). We chose a scoping review (Arksey & O'Malley, 2005; Munn et al., 2018) with the purpose of reviewing the existing theoretical literature to identify knowledge gaps and scope a body of literature, as well as to map the concepts of effective PD. We proceeded with our research in three steps:

1. Preliminary study: a team of eight researchers decided on inclusion/exclusion criteria, searching strategies and sources, and publications selected for analysis and identified relevant articles to answer the research questions (Levac et al., 2010).
2. The main study: the authors analysed articles in detail to reveal the diversity and problematics of the perspectives reflected in the studies regarding the three research questions.
3. Conceptualisation: the authors identified knowledge gaps and summarised knowledge for further analyses.

When searching for articles, the keywords were derived from the following research questions: professional development OR professional learning OR further education OR continuing education OR continuing professional development OR in-service training OR professional growth OR professional empowerment OR professional upskilling AND effective OR effectiveness OR effect OR impact OR influence AND transfer OR transfer of training OR training transfer OR transfer of learning OR learning transfer OR transfer into practice OR transfer of results AND systematic review OR systematic literature review OR systematic synthesis OR meta-analysis.

In order to not expand the scope of research, we did not focus our searching strategies on the concepts of organisational learning and workplace learning, although contextually these are important aspects for the transfer of PD results into practice. Finally, inclusion and exclusion criteria were applied to the scoping review (see Table 1) to focus on the whole picture. This is an essential step both for determining the directions of future research and for limiting the number of studies relevant to the research questions.

Table 1. Inclusion and exclusion criteria for the scoping review.

Aspect	Inclusion Criteria	Exclusion Criteria
Source	Web of Science, Scopus, ERIC, EBSCO, Sage Journals, SpringerLink Contemporary Journals, Wiley Online Library, Taylor & Francis Library, ScienceDirect, MDPI, Emerald eJournals Premier	other resources
Language	English or German	other languages
Publication year	2004–2024	before 2004
Publication type	journal articles, research reports	books, chapters, conference proceedings
Research type	meta-analyses and various types of reviews (e.g., systematic review, integrative review, rapid synthesis review, scoping review, mapping review, etc.)	other
Target group (field)	employed adults, professionals	unemployed adults
Full-text paper available	yes	no
Protocol	PRISMA or other relevant protocol is used	PRISMA or other relevant protocol is not used
Answered RQ1–3	yes	no

In total, 151 articles were selected by the team of eight researchers for further analysis after searching publication titles, keywords, and abstracts in 11 databases (EBSCO, Emerald eJournals Premier, ERIC, MDPI, ScienceDirect, Sage Journals, Web of Science, Scopus, SpringerLink Contemporary Journals, Taylor & Francis Library, Wiley Online Library). In the second research phase, 60 articles that fully responded to the inclusion criteria (Supplementary Materials) were identified by searching the full text. It was found that 62% of the selected articles were targeted to teacher PD, 25% to the growth of healthcare professionals, and 13% to developing PD in general or in other professions.

Of the articles selected for detailed analysis, 52 articles include answers to RQ1 (“What characterises effective PD?”), 39 to RQ2 (“Which theoretical concepts in the scientific literature represent the transfer of adult PD into practice?”), and 41 to RQ3 (“What processes and indicators show effective ways of transferring PD and learning outcomes into practice?”).

For a detailed summary, including the author(s), publication year, source (database), research type, target group (field), number of studies included in the research, period of publication, research design and location, and contribution(s) to the current study in addressing the three research questions, please refer to Supplementary Materials.

3. Results

3.1. RQ1: What Characterises Effective PD?

The concept of PD and its effectiveness has been widely discussed over the last two decades, providing many widely recognised reviews, systematic analyses, and meta-analyses regarding the PD of teachers (e.g., [Basma & Savage, 2018, 2023](#); [Kyndt et al., 2016](#); [Sims et al., 2021, 2023](#); etc.), as well as some for healthcare professionals (e.g., [Allen et al., 2019](#); [Main & Anderson, 2023](#); [Firmstone et al., 2013](#); [Hill et al., 2009](#), etc.) and other professionals ([Shahzad et al., 2023a, 2023b](#); [Wong et al., 2018](#); [Pargmann et al., 2023](#); [Fogaça et al., 2024](#)). Nevertheless, the concept’s complexity and methodological ambiguity lead to a lack of clarity and cannot be generalised and applied to various and changing contexts.

It must be acknowledged that the “ambition to identify general features of effective professional development is also problematic” ([Asterhan & Lefstein, 2024](#), p. 11), even

in educational settings. As “we absolutely know how to change what teachers know and do” (Desimone, 2023, p. 2), the main problem is related to the hardly measurable and comparable impact of teacher PD on student learning and the transfer of learning into more general settings. Similar conclusions have been made in the field of healthcare, reporting great heterogeneity with no common features regarding duration, frequency, or method of intervention (Hill et al., 2009) as well as the impact of PD: “In order to capture the broad range of impacts of CPD, including those that are unanticipated, a more broadly encompassing definition of impacts that goes beyond knowledge, attitude, and behaviour change and incorporates the full range of potential impacts of CPD programmes, is required” (Allen et al., 2019, p. 1097).

Although most authors define PD as formally organised activities for improved performance, though without hard evidence, many reviews focus on the concepts of the learning community, workplace learning, coaching, and mentoring as a part of PD (Hughes et al., 2020; Wang et al., 2022; Salmerón Aroca et al., 2023), particularly that of teachers (Kyndt et al., 2016; Yang et al., 2022; Filderman et al., 2022) and healthcare professionals (Campbell et al., 2019). These reviews emphasise informal learning as an important but hardly measurable and contradictory aspect of professional learning and development (for instance, Basma and Savage (2023) did not find significant results related to coaching in their review). Notably, no large-scale studies for workplace learning effectiveness have been identified (Ventista & Brown, 2023).

This is why three critical considerations related to the use of the concept of PD are chosen as the reference points for analysis:

1. Measurability and the problem of evidence;
2. The incomparable effects of formal, informal, and workplace learning;
3. The transformative potential of professional learning.

Effective PD is characterised in 52 publications as follows:

- Desimone’s conceptual framework (Desimone, 2009; so-called ‘consensus view’) for ‘high-quality’ teachers’ PD, which is characterised by ‘core features’: content focus, active learning, coherence (relevance), duration, and collective participation (Didion et al., 2020; Donath et al., 2023; Filderman et al., 2022; Parkhouse et al., 2019; Willems & Van den Bossche, 2019);
- Desimone’s revised framework (Desimone, 2023), emphasising individual PD processes and the role of leadership, and the expanded framework, which adds other relevant concepts—the process of teacher change (Guskey, 2002) and wider organisational contexts (Philipsen et al., 2019);
- Design elements of teachers’ PD programmes (Darling-Hammond et al., 2017)—content focus, use of models and modelling, active learning, collaboration, coaching and expert support, feedback, reflection, and sustained duration (Boz, 2023; Lo, 2021; Surahman & Wang, 2023);
- Teachers’ motivation, attitude, commitment, and self-efficacy (Johari et al., 2022);
- Content, process and structure, collective engagement, goal alignment, and ongoing and sustainable support (Huang et al., 2022);
- Kirkpatrick’s (1959) general and teacher-specific models, which evaluate PD programmes on four different levels: reaction, participant’s learning, changes in learner’s behaviour, and the programme’s impact on objectives (Ahadi et al., 2024; Ayeleke et al., 2019; Campbell et al., 2019; Firmstone et al., 2013; Hill et al., 2009; Pagnucci et al., 2023; Petersen et al., 2024; Phillips et al., 2019), and Guskey’s (2000) model, an adapted version for educational settings;
- Moore’s expanded outcomes framework (Moore et al., 2009)—participation, satisfaction, learning (declarative and procedural knowledge), competence, performance,

patient health, and community health—for continuing medical education (Williams et al., 2023);

- The IMTP model—insight, motivation, techniques, and practice (Sims et al., 2021, 2023).

Effective PD for teachers is summarised in 35 selected publications for different contexts (for STEM teachers—Boz, 2023; Huang et al., 2022; Lo, 2021; for reading achievement—Didion et al., 2020; Basma & Savage, 2023; for inclusive education—Donath et al., 2023; Ahmed et al., 2022; for novice teachers—Hirsch et al., 2021; for early childhood and care—Jensen & Rasmussen, 2019; Obee et al., 2023; Peleman et al., 2018; for mathematics teachers—Johari et al., 2022; for science teachers—Kowalski et al., 2020; for science teachers’ online learning—Li et al., 2023). Nevertheless, it is acknowledged that the solid theoretical foundations for ‘PD features’ are not supported by direct evidence (for instance, Kowalski et al., 2020; Sims et al., 2021, 2023). Moreover, it is argued (Asterhan & Lefstein, 2024) that researchers, by relying on an assumed consensus, do not test and search for solid evidence of PD’s effectiveness but instead are looking for correspondence between PD processes and consensus view statements.

Overall, different aspects of PD effectiveness are studied depending on what the result is considered to be—for teacher PD, this may be improved students’ or teachers’ performance. Some studies (e.g., Basma & Savage, 2023; Sims et al., 2021, 2023; Didion et al., 2020; Kahmann et al., 2022; Kowalski et al., 2020; Zhou et al., 2022) employ the link between teachers and students’ performance (described by Kennedy, 2016; Darling-Hammond et al., 2017; Desimone, 2009; etc.), assuming (but not always empirically justifying) that if the performance of teachers resulting from increased knowledge, understanding, and mastery improves, students’ learning and results will also improve (noted by Dunst et al., 2015). Similar conclusions emerge from research in the health sector; for instance, “while there is good evidence that continuous PD is effective in increasing practitioner knowledge, there is less evidence that it changes clinical practice” (Main & Anderson, 2023, p. 2).

Most PD in the reviews is related to PD programmes, searching for the best ways to characterise their effectiveness. There are two main perspectives regarding the effectiveness of PD programmes (Li et al., 2023):

1. Evaluate the impact of PD programmes based on participants’ performance, measuring the learning outcomes represented as improved practice.
2. Evaluate the effectiveness of PD programmes, collecting participants’ personal reviews (subjective evaluation).

In this respect, Asterhan and Lefstein (2024) refer to recent research and argue that teachers’ self-reported gains in PD do not correlate with subsequent direct assessments of teacher knowledge. Nevertheless, Donath et al.’s (2023) meta-analysis revealed no difference between self-rated knowledge and knowledge assessed using tests. Higher effects of PD demonstrated for programmes connected to a specific subject domain may be related to the notion that measurements of student outcomes are mostly subject-oriented (Kahmann et al., 2022); therefore, more general effects could not be measured at all.

Some authors conclude that secondary school teachers are offered more formal PD, but primary school teachers are more often engaged in learning communities, receiving less formal PD (Ventista & Brown, 2023). Although the majority of the research is focused on formal PD, it has also been noted that formal and informal PD are unjustifiably dichotomised; these forms of learning are marginal states, but the reality is in between—i.e., continuous and undifferentiated (Kyndt et al., 2016). It is diverse support for practicing what has been learnt (perhaps also informally, but certainly contextually and dependent on the organisation’s learning culture) that constitutes sustainable PD practice.

Criticising the insufficiently developed methodology of previous studies (Sims & Fletcher-Wood, 2021), a group of researchers (Sims et al., 2021, 2023) has developed a

new theory for guiding teachers' effective PD—the IGTP (Sims et al., 2021) or IMTP (Sims et al., 2023) model. In this theory, effective PD is defined as “the ability to improve teaching, as reflected in pupil test scores” (Sims et al., 2023, p. 3). While being limited in a variety of PD outcomes, this narrow perspective on PD offers testable indicators for measuring effectiveness in order to explain the impact of PD designs on teaching and learning. A set of causally active 14 mechanisms developed by the analogical abduction of the broader literature is used to operationalise the four constitutive parts (‘things’) of effective PD—insight, motivation, techniques, and practice—derived by analysing failings in teachers' PD described in previous studies.

Systematic reviews empirically justify the model's usefulness and examine two hypotheses regarding the impact of PD programmes, concluding that the “number of mechanisms incorporated in a PD programme is associated with greater impact of the PD on test scores” and “balanced PD programs do have higher average effect sizes than imbalanced PD programs” (Sims et al., 2023, pp. 23, 26). The IMTP model provides a granular, flexible approach for PD designers “in order to develop teacher insights, motivate change, develop techniques, and embed these in practice” (Sims et al., 2023, p. 28).

Acknowledging that evidence about the impact of continuing PD (CPD) on patient outcomes and clinical practice remains unclear (Petersen et al., 2024) or is not statistically significant, research characterises the effective CPD of health professionals as interactive, using a variety of methods, providing multiple exposures over a longer period of time, and focusing on content that is important for practitioners (Main & Anderson, 2023). It has also been noted that just a variety of programmes, unless they are sustainable, may produce fragmented improvement (Hill et al., 2009). Recently, research has focused on the modalities of CPD, concluding that “no one unique mode of delivering CPD programmes (face-to-face, online, and blended) will be sufficient to ensure optimal results in delivering CPD programmes” (Pagnucci et al., 2023, p. 6).

A few systematic reviews have also been devoted to other professions:

- Sport psychologists (Fogaça et al., 2024), using the perspective of counselling and supervision as a means for PD and identifying specific developmental characteristics related to a professional career;
- Librarians (Shahzad et al., 2023a, 2023b), focusing more on sustainable competence development needs and challenges than on effectiveness;
- Accountants (Pargmann et al., 2023), considering changing job profiles related to digital transformation and exploring new technologies rather than providing routine PD; and
- Engineers (Wong et al., 2018), exploring mentoring as a career development approach instead of PD.

Regarding the systematic analyses reviewed, it can be summarised that PD is regarded as effective if the following criteria are met:

- Learning results are applied in the workplace (Campbell et al., 2019);
- Learning results are transferred into practice (Filderman et al., 2022) or embedded in practice (Sims et al., 2023);
- It changes teachers' attitudes, beliefs, knowledge, and understanding (Ahmed et al., 2022; Didion et al., 2020);
- It is transformative and fosters professionalism (Boylan et al., 2023);
- It is practice-based, and developed skills are transferred from authentic professional learning situations to the classroom (Hirsch et al., 2021);
- It has a positive impact (Ahadi et al., 2024; Willemsen et al., 2023) or effect in terms of improved practice (for instance, student learning outcomes are improved);

- It demonstrates outcomes according to Moore’s framework: participation, satisfaction, declarative and procedural knowledge, competence, performance, patient health, and community health (Williams et al., 2023);
- It is provided in a balanced way by using different mechanisms (Sims et al., 2023);
- It is sustained and linked to students’ learning goals, is based on best practices and delivered by coaches/experts, includes collaborative participation among teachers, derives from student needs, and is implemented with school support, including solid leadership and reflective teaching practices (Basma & Savage, 2023).

This highlights the complexity of assessing and comparing effective PD transfer into practice. Besides, it is important to note that limited evidence does not mean that PD has not been effective (Firmstone et al., 2013).

Since different concepts are used in the research literature to characterise the transfer of PD into practice, as it is determined by different contexts, research traditions, and practices, it is essential to create a conceptually unified view of the terms used to characterise and describe effective PD while acknowledging and accepting the risk of losing the nuances of particular concepts. Some researchers (for instance, Jensen & Rasmussen, 2019) recommend developing a flexible design framework, ensuring different contexts but still enabling comparable analyses of the impact of PD while acknowledging that “the most effective type of PD” could not be generally defined.

3.2. RQ2: Which Theoretical Concepts in the Scientific Literature Represent the Transfer of Adult Professional Development into Practice?

The gap between acquiring new knowledge and skills in PD and applying them in the workplace is also a persistent challenge from the point of view of theoretical justification. Understanding the theoretical concepts behind the transfer of learning is crucial to bridging this gap and maximising the effectiveness of adult education programmes. However, in the context of our research, we should look not just at programmes but also more broadly at PD as a whole, including workplace learning and self-organised learning. The transfer of adult PD into practice involves various theoretical concepts, from adult learning theory to organisational behaviour and instructional design. These concepts provide valuable insights into how people learn, how effective teaching can be designed, and how educational outcomes can be improved, helping explain how adults acquire, retain, and apply new knowledge and skills in their professional environments. Theoretical concepts guide research, inform teaching practice, and shape educational policy in a variety of learning environments.

Of the selected articles in which we were able to identify an answer to the second research question, the majority (24) were conducted in the field of PD for teachers and those working in the education sector, followed by the PD of healthcare and medical professionals (12). Twelve articles refer to the model developed by Kirkpatrick (Ahadi et al., 2024; Allen et al., 2019; Ayeleke et al., 2019; Ayivi-Vinz et al., 2022; Campbell et al., 2019; Firmstone et al., 2013; Hill et al., 2009; Li et al., 2023; Nexø et al., 2024; Pagnucci et al., 2023; Petersen et al., 2024; Phillips et al., 2019), while eight refer to Guskey’s model (Ahadi et al., 2024; Basma & Savage, 2023; Didion et al., 2020; Huang et al., 2022; Kahmann et al., 2022; Li et al., 2023; Philipsen et al., 2019; Sims et al., 2021). The Kirkpatrick model is popular in the theoretical framework for evaluating the effectiveness of PD outside the education sector, such as in the context of the PD of healthcare and medical professionals. This is due to the fact that the model is structured and enables the assessment of PD effectiveness at the organisational level based on specific criteria (Petersen et al., 2024). Several researchers (Blume et al., 2010; Hughes et al., 2020; Wiřhak, 2022) refer to one of the earliest conceptual frameworks for learning transfer—Baldwin and Ford’s model of training transfer. In this

model (Baldwin & Ford, 1988), transfer is explained as learning acquired in the workplace, using improved and newly learnt skills in different situations and maintaining them over a longer period of time. Transfer can be assessed as the use of learnt knowledge or skills and as the effectiveness of the learner's application of knowledge or skills. Factors in the work environment during this time, such as support from management and colleagues and limitations or opportunities to use the skills learnt at work, are important.

According to Blume et al. (2010), training transfer can be viewed as two types of processes: generalisation (to what extent the knowledge and skills acquired in the learning environment are applied in different environments and situations outside of learning) and maintenance (how changes resulting from learning experiences persist over time). Therefore, learning transfer is more than just what was learnt during the training; primarily, it is the proof that the acquired competences are used in the job for which they were intended. In the context of PD transfer, employees should meaningfully think, feel, and/or act differently than before (Blume et al., 2010; Wiśhak, 2022).

Frameworks such as Guskey's five levels of PD evaluation (Guskey, 2000; Guskey, 2003) and Desimone's conceptual framework (Desimone, 2009) help us understand how the knowledge and skills gained through PD are applied in practice (Donath et al., 2023; Kowalski et al., 2020; Willems & Van den Bossche, 2019). Guskey's approach, for instance, evaluates the effectiveness of PD on different levels, including participants' reactions, learning, and the application of new knowledge or skills (Li et al., 2023). This transfer process also requires alignment between the PD activities and the actual work context of the participants, highlighting the importance of situating learning within relevant professional challenges and environments.

The Kennedy framework (Kennedy, 2005, 2014) is an important theoretical underpinning of several studies (referred to by Ahadi et al., 2024; Basma & Savage, 2023; Boylan et al., 2023; Didion et al., 2020; Fernández-Batanero et al., 2022; Hirsch et al., 2021; Kahmann et al., 2022; Li et al., 2023; Petersen et al., 2024; Main & Anderson, 2023; Ventista & Brown, 2023; Williams et al., 2023) for analysing CPD models. Kennedy (2005) developed a framework in which the main characteristics of nine CPD models are identified and categorised: the training model, the award-bearing model, the deficit model, the cascade model, the standards-based model, the coaching/mentoring model, the community of practice model, the action research model, and the transformative model. All models are organised into three broad categories—transmission, transitional, and transformative. The models' structure shows that the professional autonomy abilities of teachers (as adult learners) should increase when moving from transmission to transformative categories.

When explaining the interconnections of PD, theories of action are utilised to ensure that professional learning serves as a long-term outcome, including in relation to change theories. Effective PD leads to positive changes both in individual performance and in organisational development. Theories of action help analyse why, how, and for whom PD is effective (Kowalski et al., 2020; Rogers et al., 2020). In this context, significant theoretical concepts for ensuring effective PD include specific and clear requirements, factors related to adult learner self-motivation, the relevance of learning to practice, and a supportive leadership and workplace culture. Thus, it incorporates the theoretical principles of both behaviourism and pragmatism (Main & Anderson, 2023; Mairs et al., 2013).

Psychological theories are also implemented in the justification of PD, emphasising that it should help mitigate stress and reduce the risks of burnout (Hirsch et al., 2021). PD should be implemented within a practice-based PD framework, taking into account that effective PD incorporates active learning, focuses on specific content and skill development, provides multiple models of practice, delivers several sessions over a period of time, and offers adults the opportunity to learn and practice new skills (Hirsch et al., 2021).

Theoretical concepts of active learning are revealed through analysis, highlighting the importance of supervision, the apprenticeship model, peer-to-peer support, coaching, expert support, and workshops in PD. These various approaches help practitioners understand how to refine and apply the knowledge, skills, beliefs, or behaviours they have acquired. Thus, PD enhances self-efficacy (Johari et al., 2022; Rogers et al., 2020; Willems & Van den Bossche, 2019; Lo, 2021; Hirsch et al., 2021), enabling personalised PD learning paths (Main & Anderson, 2023). PD training should be interactive, employing a variety of methods (such as case-based learning, demonstrations, feedback, lectures, problem-based learning, role play, and simulations) and delivered in a sequence that involves multiple exposures over an extended period. The training should focus on outcomes deemed important by practitioners (Main & Anderson, 2023).

In the analysis of adult PD, essential theoretical principles also emerge from interdisciplinary and transdisciplinary collaborative learning, which helps to analyse and transform their practice (Lo, 2021; Kowalski et al., 2020).

In the transfer of PD outcomes in the context of learning and motivation theories, attention should be paid both to the learning participant and to the adult educators because they prepare the participants for the transfer of the learning experience. Needs assessment, appropriate learning content and methods, cognitive abilities, awareness, motivation, self-efficacy, support, and feedback in the workplace are important in transfer (Wiśhak, 2022).

Professional learning should be implemented by providing adults with formal learning through programmes, as well as both formal and informal learning in the workplace, including self-directed and collaborative learning (Zhou et al., 2022). Synthesising theoretical perspectives with empirical evidence highlights the importance of the coaching approach, derived from anthropological theories, in PD (Main & Anderson, 2023; Yang et al., 2022). The situated learning theory has also been discussed as a basis for PD (Yang et al., 2022).

Some studies are based on social constructivism theory (one of the most effective approaches to effective learning), the concepts and principles of adult education (andragogy), the application of flipped learning, information processing, and technological pedagogical content knowledge (TPACK) frameworks (Lo, 2021; Rogers et al., 2020; Surahman & Wang, 2023; Williams et al., 2023). Studies also examine PD or professional learning in the context of online learning strategies, particularly concerning information processing and flow theory in relation to technology-based learning (Zhou et al., 2022). The selected theoretical concepts depend on the branch in which the research was conducted, as well as the fields of science represented by the researchers. The study of the PD of (sports) psychology practitioners is grounded in psychological theories, explaining how PD occurs within the context of personality development, including emotional, cognitive, and behavioural aspects. It is argued that effective PD should encompass processes such as learning by doing, reflection, supervision, and connections and networking with peers. Specifically, learning by doing is identified as the central concept for effective PD (Fogaça et al., 2024).

Some authors indicate the importance of self-determination theory (Li et al., 2023; Wiśhak, 2022) in effective PD and its transfer. According to the self-determination theory, intrinsic motivation, which is particularly important for typical transfer, is promoted by the learners' autonomy, their experience of competence, and social integration. Additionally, Su et al. (2023) analysed the didactic–mathematical knowledge and competencies (DMKC) model for initial teacher training in mathematics for sustainability in a systematic review, describing the importance of the focus and sustainability of initial teacher education and PD for teachers (in this case, mathematics teachers).

The selected articles include a number of theoretical concepts developed in the context of organisations and/or programs used rather than justifying learning as an individual and social phenomenon. Numerous derived theories are used as the theoretical basis of the analysed articles, and an invitation was even made to develop a new theory of the transfer of PD. Additionally, a discussion regarding whether the existing theoretical foundation is sufficiently supported by strong evidence is encouraged. However, it is impossible to create a universal theory because PD is a multidimensional phenomenon that needs to be analysed interdisciplinarily and contextually. As transfer research is multidisciplinary (Hughes et al., 2020; Kowalski et al., 2020), transfer research will always be multidisciplinary, as will the theoretical concepts used to support it.

3.3. RQ3: What Processes and Indicators Show Effective Ways of Transferring PD and Learning Outcomes into Practice?

Although discussions about processes and indicators showing effective ways of transferring PD and learning outcomes into practice have been around for some time in both psychology and education, an empirical synthesis is still lacking (Blume et al., 2010).

Relevant publications in teacher PD contain a number of proposals for key indicators. The ultimate goal of PD and PD programmes is to help in-service teachers to develop positive attitudes, knowledge, skills, and beliefs in order to improve students' learning outcomes and behaviour and improve other children's school experiences (Donath et al., 2023; Filderman et al., 2022). Zhou et al. (2022), analysing 37 studies, summarised the learning outcomes of vocational education pedagogues (mostly found to be positive) as follows: (1) pedagogy and industry knowledge and skills, (2) emotions (e.g., whether educators are satisfied with their learning experience), (3) value relevance (how educators perceive the importance of what they have learned in their pedagogical practice), (4) motivation and attitude (do educators have a characteristic enthusiasm and desire to apply what they have learned in practice), (5) new awareness (does something change conceptually in the pedagogue's perception and thinking), (6) impact on teaching practice (what changes occur in the teaching practice of pedagogues), (7) student/pupil results (what is the benefit of teachers' professional learning for learners), and (8) institutional results (what is the benefit of professional learning the teacher's colleagues, educational institution, and industry).

Filderman et al. (2022) concluded that teachers' training in data literacy has significant positive effects on both teacher knowledge/skills and teacher beliefs. At the same time, they admitted that future research that evaluates how training impacts long-term effects on practice is necessary. Participants must be given sufficient time to adopt new ideas into their practice and transform it. Therefore, the degree and quality of implementation practice should be evaluated. Depending on the purpose of PD, the scientific literature recommends using questionnaires, structured interviews, lesson plans (for teachers), oral or written individual reflections, participant journals, dictionaries and portfolios, direct observations by professional observers or digital recorders, videos, and other methods to evaluate the effectiveness of PD (Huang et al., 2022). Self-assessment is not considered sufficient to evaluate the results of PD; scientists often recommend strict quality monitoring in the process of the implementation and evaluation of PD planning, using formative and summative evaluations (Boz, 2023).

PD outcome measurement can be identified as cognitive, behavioural, affective, and correlational. According to Huang et al. (2022), the most common subcategories for the cognitive dimension are higher-order thinking, student achievement, teacher learning outcomes, and teacher collaboration. On the other hand, the affective dimension involves self-efficacy/belief/identity and teachers' opinions on various issues related to PD, followed by attitude/motivation. When characterising the behaviour dimension, teachers

were most often asked, for example, how often they used so-called online learning. In addition, [Huang et al. \(2022\)](#) recommend specifying skills as pedagogical ideas/practices. Teachers' skills/practices/ideas were mainly assessed by observing teachers in action and conducting interviews. Correlation studies analysed the relationship between the knowledge acquired and teachers' practice.

In order for the results of PD to be implemented in practice, including in the long term, the organisational aspect is crucial. [Hughes et al. \(2020\)](#) conducted a meta-analysis on the importance of three indicators of work environment support in order to transform the PD outcomes—peer, supervisor, and organisational support—in relation to the training results' (knowledge, skills, and attitudes) transfer, persistence, and long-term use. The meta-analysis concluded the importance of the work environment in the transfer of learning outcomes for all indicators. Motivation to transfer for trainees was shown to act as an important mediator, explaining the ability of work environment support variables to predict training transfer. Organisational, supervisory, and peer support are explained by motivation to transfer as a mediator, and all these factors predict the persistence of learning outcomes. All three levels of work environment indicators are recognised as statistically significant, confirming their unique importance in training transfer. Peer support in the work environment has the greatest relative importance in predicting the transfer of training outcomes. The conclusions emphasise the importance of designing training as a systemic, multi-level process that takes place on an ongoing basis and that all levels of support in the work environment (i.e., organisation, supervisors, and colleagues) are essential for sustaining learning outcomes.

The effective transfer to practice in teacher education is evidenced by the positive impact of PD on child/student learning outcomes ([Sims et al., 2023](#); [Ventista & Brown, 2023](#); [Didion et al., 2020](#); [Asterhan & Lefstein, 2024](#); [Jensen & Rasmussen, 2019](#); [Johari et al., 2022](#)), most commonly evaluated by standardised student test scores. For example, [Didion et al. \(2020\)](#) investigated the impact of teachers' PD on the reading results of preschool children and students up to the 8th grade. However, the systematic review developed by [Ventista and Brown \(2023\)](#) concluded that no research was identified that examined the impact of teacher PD on other valuable 21st-century educational outcomes and skills needed by future citizens, such as students' critical thinking, creativity, motivation, or collaboration skills.

Based on the results of a systematic review, [Ahadi et al. \(2024\)](#) concluded that the 41 reviewed papers do not utilise evaluation frameworks designed to assess the PD workshop programmes. Most papers included in the scoping review did not deploy comprehensive PD evaluation models to assess teacher PD workshops or report on the use of established instruments for the purposes of data collection. Thus, the majority of these studies did not attempt to evaluate different dimensions of teacher change. Thus, Ahadi et al. recommend that the evaluation of the effectiveness of PD programs should be carried out, taking into account the following considerations: (a) programmes' evaluation should be based on the theories of evaluation and teacher change, (b) a comprehensive range of PD dimensions to be evaluated should be developed, (c) various data should be collected before the implementation of the PD programme, during the implementation of the programme, and after the completion of the programme, and (d) validated tools should be used in the evaluation, not hastily created, questionable, and theoretically agnostic questionnaires. Only then can researchers develop a more complete understanding of the effectiveness of PD and individuals' readiness and ability to transfer the acquired experience into practice.

[Basma and Savage \(2023\)](#) concluded that none of the analysed studies presented indicators of the implementation of teachers' PD based on theory. It was recognised that a full-fledged PD model has not been established; thus, potential factors have been

investigated, but not a complete set of theoretical influencing factors. The research data showed an apparent disconnect between what the theory of effective teacher PD expounds and the content and approaches of well-designed empirical studies of teacher PD. Thus, further research is recommended to identify changes in teachers' knowledge and attitudes in PD. The review by [Boylan et al. \(2023\)](#) also indicates that transformative professional learning is under-theorised, with accounts emphasising only one or two features, usually agency, collaboration, or educational purpose. The authors suggest that transformative professional learning should be grounded in clarity about its purpose, knowledge, and the relationship to the knowledge developed.

Another aspect that has not been researched properly is the context of PD. Context plays an important role in PD practitioners' / researchers' successes and challenges in the field. However, only a few studies included detailed information regarding teacher, school, and district backgrounds ([Boz, 2023](#)). Relevant publications in psychology focused on the transfer of training from a psychological perspective. There is a long history of such research. [Blume et al. \(2010\)](#) found that learning outcomes may decay over time. Their meta-analysis of 89 empirical studies explored the impact of predictive factors (e.g., trainee characteristics, work environment, training interventions) on the transfer of training to different tasks and contexts. They used the model of training transfer presented by [Baldwin and Ford \(1988\)](#) as their theoretical basis. Thus, [Blume et al. \(2010\)](#) concluded that the single largest relationship to transfer involved cognitive ability. However, transfer is not solely dependent on trainees' cognitive ability, as other moderately strong relationships were observed for other trainee characteristics, such as conscientiousness and voluntary participation. Neuroticism, pretraining self-efficacy, motivation to learn, and a learning goal orientation also had moderate relationships with transfer. Specifically, most predictor variables examined (e.g., motivation, work environment) had stronger relationships to transfer when the focus of training was on open (e.g., leadership development) as opposed to closed (e.g., computer software) skills.

Fewer studies were found for the representatives of other professions. In these studies, similar to the case of teachers' PD, it was also concluded that the transfer of PD into practice can be evaluated at different levels—both at the level of the individual and at the level of the organisation. Therefore, the connection of the transfer with individual needs, such as personality and professional activity, can be evaluated (in the context of the workplace, according to the needs of the organisation) ([Shahzad et al., 2023b](#)). For example, [Ayivi-Vinz et al. \(2022\)](#) evaluated the changes in the behaviour of healthcare specialists as a result of CPD activities, using the CPD-REACTION questionnaire. In another study ([Williams et al., 2023](#)) on the transfer of the results of the PD of healthcare specialists into practice, it was recognised that there were improvements in professional performance in the workplace (workplace-based performance) and in their professional practice (performance in one's own practice), using Moore's outcomes framework ([Moore et al., 2009](#)).

Kirkpatrick's classic model ([Kirkpatrick & Kirkpatrick, 2016](#)) is also used relatively often to evaluate PD transfer ([Ayeleke et al., 2019](#); [Pagnucci et al., 2023](#)). As concluded by [Ayeleke et al. \(2019\)](#), most of the studies included in the review focused primarily on the effects of PD at the individual level, e.g., assessing participants' knowledge and skills, as well as professional performance related to level 2 (learning) and level 3 (behavioural) assessments from Kirkpatrick's model. Little, if any, data were collected for level 4 (outcomes) relating to organisational performance (which could include healthcare quality and patient outcomes in the healthcare context). Therefore, the authors could not objectively draw conclusions about the impact of PD on organisational performance.

It can be concluded that researchers have put forward several indicators of effective PD transfer. There are identifiable performance indicators, such as student learning out-

comes in standardised tests, student behaviour, course duration, cognitive abilities, etc. Several process indicators (quality) have been identified: learning outcomes (knowledge, skills, attitude, beliefs, competencies, emotions, perceptions, new awareness, motivation, engagement, satisfaction, self-efficacy), trainer satisfaction, employer satisfaction, impact on teaching practices, transfer of knowledge, persistence and long-term use, pedagogical ideas/practices, work environment, teacher collaboration, peer, supervisor, and organisational support, generalisation, maintenance, etc. These indicators may refer to the individual, organisational, programme/intervention, or global level. In psychology and education, at an individual level, it refers to both professional and personal aspects, such as knowledge, skills, attitudes, beliefs, cognitive ability, motivation, etc.

In many cases, the effectiveness of teachers' PD and its transfer is linked to the achievements of students, as they can be objectively evaluated using standardised tests; usually, the students' academic achievements are evaluated. However, insufficient studies have been identified that assess how the transfer of PD influences other aspects of student performance (development of 21st-century skills, social-emotional development, behaviour). Various environmental factors—peer, supervisor, and organisational support—are essential in ensuring training transfer, persistence, and long-term use of PD results at the organisational level. PD context also plays an important role in the transfer. Although the effectiveness of PD programmes is evaluated in two ways—by evaluating objectively measurable indicators (students' achievements) and by subjective evaluations—the personal benefits to teachers and the programmes' effectiveness are not always evaluated correctly, especially in the long term.

4. Discussion

Over the past 15–20 years, researchers have attempted to define what effective PD is. Several theoretical models of PD practice have been developed, and several effectiveness indicators and identified processes related to the transfer of PD into practice have been discussed. Recent research reflects a consensus that PD is helping teachers to improve their knowledge, skills, and practice, thus hopefully increasing student achievement. Despite that, there is no clear set of indicators that researchers regularly measure in empirical studies of PD (Desimone, 2009). The complexity of the issue that focuses on the need for clarity at the specific level of PD and what the impacts are for practice has been evaluated. Although recent research has tried to resolve the complex question of the effectiveness of PD and then put those theoretical models into practice, implementing programmes based on these premises, there is still an urgent need to make some kind of common theory-based practice in all fields. Analysing the recent developments, certain gaps in the knowledge and questions that should be addressed in the future have been identified (see Table 2).

It is assumed that effective PD will improve teachers' performance and probably increase student outcomes and transfer processes (such as bridging the knowledge–doing gap), probably occurring in workplaces in non-linear ways, are needed for that. Nevertheless, the value of PD is individual and contextual and depends not only on the PD content, types of programs and mechanisms, support, etc., but mainly on the professional's own ability to analyse what is valuable for a particular situation (what can improve performance or make a process more efficient by optimising it) and what is not. Improving performance for teachers means becoming a reflective practitioner, working harder by transferring PD gains to practice, and using evidence to constantly revise ongoing practice by experimenting—giving up less effective techniques and strategies to introduce new and more promising ones. In this process, it is not possible to distinguish the pathway of single PD programme outcomes to characterise their effectiveness. Therefore, PD results should be measured in the workplace (at the individual or organisational level), not in

single interventions as the result of particular PD programmes. Besides, personalised and self-directed PD that is based on teachers' metacognitive competence and embedded in a school's organisational culture emphasises the paradigm shift from 'deficit paradigm' to 'teacher as active participant' who constructs their own PD trajectories, conceptualising teacher professional learning and PD in terms of internal teacher growth or change rather than in terms of activities.

The concept of effectiveness itself is based on measurable impact; thus, it is embedded within performative structures and could be applied to reproductive activities and systems with clear performance indicators. It does not provide a means for evaluating the transformative aspects of PD and learning. Studying the long-term effects on practice is necessary: participants should be given enough time to adopt new ideas into their practice and transform it. In his proposed "Five Levels of Professional Development Evaluation", [Guskey \(2002\)](#) argues that level 1 ("Participant reaction") and level 2 ("Participant learning"), which combine satisfaction about learning and new knowledge and skills, can be immediately evaluated after PD, but information about level 4 ("Participant use of new knowledge and skills") cannot be gathered straight after a PD session. According to [Knapp \(2003\)](#), the purpose of PD assessment is to examine changes in thinking, knowledge, skills, and their application, and there is a very strong recommendation to use a variety of assessment tools and involve as many different assessment agents as possible (e.g., teachers, administration, parents, etc.).

Discussions about the transformative potential of professional learning are emerging in the field ([Boylan et al., 2023](#)) by "challenging [the] dominant approach to professional learning, which focuses on attempts to identify the most 'effective' means of ensuring that teachers can improve pupils' scores on standardised tests" ([Kennedy & Stevenson, 2023](#), pp. 581–582). However, despite quite a lot of research over a long period of time, the theoretical concepts of learning transfer are still fragmented and characterised by different findings ([Wenzel & Cordery, 2014](#)). [Kennedy \(2014\)](#), reflecting on his CPD model developed in 2005, points out that it is necessary to take into account how the use of concepts changes when talking about PD. Sometimes, concepts are considered self-evident in the theoretical aspect, but from the context, different phenomena can be understood with the same concept. As time goes on, theoretical assumptions and the categories they include should be critically evaluated.

Table 2. Gaps in present knowledge.

What Has Been Researched?	Authors	Gap in Knowledge and Future Questions
Characteristics of effective teachers' PD programmes and different aspects of PD design regarding its impact on teacher and/or student outcomes, four core features: intensity, relevance, active learning, and collective participation; specific subject focus, modelling, practising, ongoing reflection, and sustainable support.	(Boz, 2023) (Donath et al., 2023) (Didion et al., 2020) (Filderman et al., 2022) (Huang et al., 2022) (Kowalski et al., 2020) (Willems & Van den Bossche, 2019)	Methodological weaknesses, little empirical support, and controversial results are reported, suggesting that there is a need to use more experimental studies to test proposed features of effective PD and to distinguish what makes PD more or less effective in different contexts and how PD programmes introduce pedagogical strategies.

Table 2. Cont.

What Has Been Researched?	Authors	Gap in Knowledge and Future Questions
The effectiveness of teacher PD transfer is linked to student outcomes, often to (easily measurable) results in tests.	(Ahmed et al., 2022) (Basma & Savage, 2023) (Boz, 2023) (Didion et al., 2020) (Jensen & Rasmussen, 2019) (Parkhouse et al., 2019) (Rogers et al., 2020) (Ryan et al., 2022) (Sims et al., 2021, 2023) (Ventista & Brown, 2023) (Yang et al., 2022) (Wifshak, 2022)	Research assessing how teacher PD results are transferred to affect diverse aspects of student performance—development of 21st-century skills, social-emotional development, behaviour, and well-being—is insufficiently identified.
Processes and indicators showing effective ways of transferring professional learning outcomes into practice; factors that can predict the transfer have been identified.	(Blume et al., 2010)	Lack of empirical synthesis for processes and indicators. What are the personal, professional, and environmental (organisational) factors?
Various evaluation models have been developed and used to assess the impact of PD in terms of different outcomes, generally indicating the positive effects of PD.	(Ahadi et al., 2024) (Ayeleke et al., 2019) (Didion et al., 2020) (Firmstone et al., 2013) (Hill et al., 2009) (Huang et al., 2022) (Kahmann et al., 2022) (Kowalski et al., 2020) (Pargmann et al., 2023) (Rogers et al., 2020) (Sims et al., 2021, 2023) (Zhou et al., 2022) (Willemsen et al., 2023) (Willems & Van den Bossche, 2019)	There are still questions about whether changes in professional training can be associated with improvements in student/client outcomes. The quality of measurements is questionable, with high degrees of heterogeneity between studies and a lack of standardised, theoretically grounded, evidence-based research that involves a broad range of outcomes (both process and performance indicators) to reveal the link between professional outcomes in PD and student/client outcomes/benefits. Quantitative and qualitative methodologies should be mixed.
The IMTP model for teacher PD evaluation: develop insights, motivate change, develop techniques, and embed these in practice. Fourteen mechanisms in a PD programme are associated with PD's greater impact on student test results, and balanced PD programmes have higher average effect sizes than imbalanced PD programmes.	(Sims et al., 2023)	Future research needs to apply the model in broader contexts and different professional fields.
Usually, short-term results are measured and reported, even for PD aspects that require sustained use to be represented in outcomes.	(Donath et al., 2023) (Filderman et al., 2022) (Yang et al., 2022)	The lack of maintenance measures for PD effectiveness is identified in the long term. Future research that evaluates the long-term effects of PD on practice and performance is necessary.
One of the achievable results of PD is a change in teacher attitudes and beliefs.	(Ahmed et al., 2022) (Basma & Savage, 2023) (Dignath et al., 2022) (Filderman et al., 2022) (Johari et al., 2022)	Incomparable measurements addressing teacher attitudes and belief systems limit exploring their relation to change in practice and student achievement. There is a need to evaluate more different dimensions of teacher change.

Table 2. Cont.

What Has Been Researched?	Authors	Gap in Knowledge and Future Questions
Controversial results about the impact of increasingly used coaching and mentoring as a part of PD are reported, and formal and informal aspects of mentoring are also discussed.	(Basma & Savage, 2023) (Didion et al., 2020) (Filderman et al., 2022) (Main & Anderson, 2023) (Rogers et al., 2020) (Wang et al., 2022) (Wiřhak, 2022) (Wong et al., 2018) (Yang et al., 2022) (Salmerón Aroca et al., 2023)	Coaching and feedback are often defined ambiguously and characterised as very different constructs, lacking consensus on the theoretical foundation related to coaching as an effective tool, not specifying coaching design, and not providing transparent data analysis. Future research is needed as there are many new contextual opportunities to use both mentoring and coaching at the organisational level to support PD transfer into practice.
A potential shift from formally organised PD courses to teacher workplace learning is recognised. Informal learning is considered an important but hardly measurable part of PD.	(Kyndt et al., 2016) (Ventista & Brown, 2023) (Zhou et al., 2022)	Research on the impact of teachers' self-organised learning and targeted workplace learning approaches on the teaching, student outcomes, and organisational factors of a school is limited and should be investigated. PD transfer is incorporated into these practices.
There are rather controversial research results about what is more effective—mandatory/obligatory versus self-directed/voluntary participation in PD.	(Donath et al., 2023) (Main & Anderson, 2023) (Wiřhak, 2022)	Objective, comparable measures to evaluate the role of voluntary versus mandatory participation of professionals in PD and the effectiveness of PD are lacking.
Various environmental factors (the context—e.g., school, district, etc.) are essential in ensuring transfer at the organisational level. PD context plays an important role in the transfer of PD results.	(Boz, 2023) (Peleman et al., 2018)	There is a lack of research about the PD context, which plays an important role in PD practitioners/researchers' successes and challenges in the field. However, it has been undervalued so far.
Community of practice is recognised as an important aspect of practice-based PD (especially in early career stages). Virtual communities of practice are an effective way to share knowledge among professionals.	(Campbell et al., 2019) (Concina, 2023) (Hirsch et al., 2021) (Kyndt et al., 2016) (Mairs et al., 2013) (Surahman & Wang, 2023) (Ventista & Brown, 2023)	There is a need for experimental research based on underlying PD characteristics and related to the broader (virtual) communities of practice.
Teacher PD duration has been analysed, with controversial conclusions. There is no consensus on the length of PD to improve teaching practice, and it could be concluded that there are other aspects than the duration of PD affecting the transfer of PD into practice and student results.	(Basma & Savage, 2023) (Boz, 2023) (Didion et al., 2020) (Dignath et al., 2022) (Donath et al., 2023) (Jensen & Rasmussen, 2019) (Kowalski et al., 2020)	Research should be carried out in the context of PD content and outcomes and whether the current indicator can be used as a PD effectiveness indicator.
No unique mode (face-to-face, online, blended) of delivery of PD activities is recognised to be most effective; however, the practical nature of training programmes is related to educational effectiveness. Research based on experimental designs regarding various modes and formats provides differing results.	(Fernández-Batanero et al., 2022) (Pagnucci et al., 2023) (Williams et al., 2023)	More experimental design research targeting higher levels of educational outcomes (including community-level outcomes) is needed for a consensus regarding various PD modes and formats.

Table 2. Cont.

What Has Been Researched?	Authors	Gap in Knowledge and Future Questions
The effectiveness of PD may be moderated by teachers' experience/career stage.	(Didion et al., 2020)	Evidence-based studies of how teaching experience is related to the transfer of PD outcomes into practice are needed.
PD is recognised as a way to transfer (translate) and disseminate findings of current research in medicine into practice, not just as the training and changing knowledge/skills/attitude of practitioners.	(Mairs et al., 2013) (Nexø et al., 2024)	The role of universities and researchers in providing PD focused on the translation/dissemination of actual research findings (evidence) into teaching practice is understudied.
Understanding of theories and concepts.	(Basma & Savage, 2023) (Li et al., 2023)	The use of theoretical concepts should be critically evaluated in line with current theories, considering dynamic changes in systems, organisations, processes, individuals, and their contexts.
PD as a learning process.	(Wiñhak, 2022)	There is a need to see learning in PD as an individual and social phenomenon, as an autonomous process involving individual growth, not only as organisational development.
Approach to the use of theories	(Surahman & Wang, 2023) (Williams et al., 2023)	A comprehensive meta-study of the theories used in the research on PD and its transfer into practice should be conducted.
Transformative professional learning has been conceptualised but is not related to the effectiveness of PD.	(Boylan et al., 2023)	Transformative professional learning is insufficiently conceptualised theoretically. It should be conceptualised across a range of aspects important for understanding both professionalism and professional learning.

Regarding teacher PD and learning, our scoping review, on the one hand, identifies gaps in the knowledge, emphasising the need for rigorous research designs, standardised indicators, and performance measurements, and on the other, it strongly resonates with the findings that characterise teacher learning “as a non-linear, complex process that makes planning and evaluating professional learning somewhat challenging” (King et al., 2023, p. 974). It proposes a pragmatic approach to conceptualising teacher professional learning according to the three major constructs—context, experience, and outcomes (King et al., 2023)—as well as the emerging effort in the field for uncovering the transformative potential of professional learning (Kennedy & Stevenson, 2023).

Finally, according to conclusions from the research in health care (Mairs et al., 2013; Nexø et al., 2024), instead of concentrating on investigating PD as interventions, training, and routines, researchers probably should rather focus on PD as a way to transfer and disseminate findings from current research in all fields, enabling them to follow how new knowledge takes place by changing practices in different contexts.

5. Conclusions

The scoping review is designed to identify and summarise current approaches, trends, and conclusions regarding the evaluation of the effectiveness of transferring PD results into practice in order to develop an evidence-based, conceptually and operationally coherent, multi-level (at national, organisational, and individual levels) PD system in Latvia.

Regarding RQ1, most of the studies reviewed analyse the PD of teachers and health-care professionals, exploring formal, informal, and workplace learning in different settings and contexts and revealing complexities and challenges in defining universal features of effective PD due to its context-specific nature and ambiguous concepts regarding outcomes. Although different models and frameworks have been developed and applied to characterise the effectiveness of PD programmes and practices, a consensus on effective PD has not yet been reached, and measuring its impact remains problematic. These models and frameworks either lack strong empirical evidence or simplify reality by losing contextual information, which reduces the possibility of using the conclusions in practice. A new theory (IMTP model: Sims et al., 2023) aims at measuring the impact of teacher PD represented in student results and offers a more granular approach to PD by focusing on insight, motivation, techniques, and practice. On the one hand, it identifies testable indicators for measuring the impact of PD programmes, and on the other, it is focused on PD interventions, not on PD as an ongoing practice within contextually rich settings. PD effectiveness has also been explored in other professions, like sports psychology, librarianship, and engineering, though these studies tend to focus on specific career development challenges rather than broader PD outcomes. In general, while PD's effectiveness varies by context and profession, ensuring that learning results are applied in practice remains a key marker of success, even as the methods for evaluating this impact continue to evolve. We conclude that the term 'effectiveness' can be aligned with successful transformational change at the levels of individual and organisational development.

By evaluating the selected publications to address RQ2, we can conclude that more theoretical models are utilised at the organisational and programme levels, while insufficient attention is given to PD as an individual and social learning process. The theoretical basis for further research should be more versatile, incorporating theories that address not only the outcomes of learning but also its processes and contexts. The dynamic global, political, social, and individual influences on adult learning mean that the pursuit of adequate theoretical concepts that help us to understand and shape it is permanent.

Answering RQ3, it was concluded that identified indicators are statistics that allow value judgements to be made about key aspects of the functioning of PD and its effectiveness. There is no common agreement on what the key indicators to be used for measuring PD effectiveness are, which is why the transfer of PD outcomes in terms of aim, content, and contexts—in different fields and professions—can vary substantially. Many suggestions about possible indicators come from researchers working in psychology and education, who use both performance (for example, student outcomes) and process indicators (for example, teacher learning outcomes). Additionally, there are indicators at the individual, organisational, programme, and global levels. A range of indicators to measure lower-level and short-term PD results has been introduced; indicators for measuring long-term results showing PD transfer into practice are less common. Finally, resorting to too many indicators exacerbates the problem since the use of different methodologies and approaches makes most research findings incomparable.

Supplementary Materials: The following supporting information can be downloaded at: <https://www.mdpi.com/article/10.3390/educsci15010095/s1>. Annex: References Analysed Reviews.

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