

The Reflective-Collegial Model Of Teacher Professional Development: An Andragogy-Based Conceptual Framework

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Abstract

Teacher professional development (PD) programs in many schools remain dominated by one-directional, short-term training formats that show limited impact on instructional practice. This conceptual paper aims to build a model of teacher PD that integrates Knowles' six principles of andragogy with three evidence-based contemporary approaches: professional learning communities (PLCs), instructional coaching, and the strengthening of autonomous motivation grounded in self-efficacy. Using a literature synthesis method, the study combines classical adult learning theory, effective-features framework, motivation theory (self-determination theory and self-efficacy), transformative learning theory, and meta-analytic evidence on coaching and PLCs to produce a coherent, evidence-based framework. The result is the Reflective-Collegial Teacher Professional Development Model (PGRK Model), comprising five dimensions: reflective self-readiness, collegial experience through instructional coaching, contextual problem orientation through PLCs, autonomous motivation grounded in self-efficacy, and sustained tiered mentoring, accompanied by five theoretical propositions for future empirical testing and a mapping of the model against established PD frameworks. The study contributes theoretically by bridging andragogy, motivation theory, and contemporary PD practice, and practically by offering schools and policymakers an evidence-based, participatory, and sustainable alternative for designing professional development programs.

Kata kunci:

andragogi; pengembangan profesional guru; komunitas belajar profesional; instructional coaching; efikasi diri; model konseptual

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Abstrak

Program pengembangan profesional guru (PD) di banyak sekolah masih dominan menggunakan format pelatihan searah dan berjangka pendek yang terbukti berdampak terbatas terhadap perubahan praktik mengajar. Artikel konseptual ini bertujuan membangun model pengembangan profesional guru yang mengintegrasikan enam prinsip andragogi Knowles dengan tiga pendekatan kontemporer berbasis bukti kuat: komunitas belajar profesional (PLC), instructional coaching, dan penguatan motivasi otonom berbasis efikasi diri. Menggunakan metode sintesis literatur, penelitian ini memadukan teori pembelajaran orang dewasa klasik, kerangka fitur efektif PD, teori motivasi (self-determination theory dan efikasi diri), teori belajar transformatif, serta bukti meta-analitis mengenai dampak coaching dan PLC untuk menghasilkan kerangka yang koheren dan berbasis bukti. Hasilnya adalah Model Pengembangan Profesional Guru Reflektif-Kolegial (Model PGRK), yang terdiri atas lima dimensi kesiapan diri reflektif, pengalaman kolegial melalui instructional coaching, orientasi masalah kontekstual melalui PLC, motivasi otonom berbasis efikasi diri, dan pendampingan berjenjang berkelanjutan disertai lima proposisi teoretis untuk pengujian empiris mendatang serta pemetaan model terhadap kerangka PD yang telah mapan. Kajian ini memberikan kontribusi teoretis dengan menjembatani andragogi, teori motivasi, dan praktik PD kontemporer, serta kontribusi praktis berupa alternatif desain program pengembangan profesional yang berbasis bukti, partisipatif, dan berkelanjutan bagi sekolah dan pengambil kebijakan

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INTRODUCTION

Teacher professional development (PD) is one of the principal determinants of instructional quality, as teacher competence must continually evolve alongside curriculum change, shifting learner characteristics, and the demands of the times. A cross-country study by Popova, Evans, Breeding, and Arancibia (2021) reveals a wide gap between the scientific evidence on effective PD and its implementation in practice: many teacher training programs remain uniform, short-term, and lacking in follow-up support, resulting in limited impact on instructional practice change. This finding is consistent with the large-scale study by Garet, Porter, Desimone, Birman, and Yoon (2001) of more than one thousand mathematics and science teachers in the United States, which identified content focus, opportunities for active learning, and coherence with teachers' real needs as the principal determinants of PD effectiveness, whereas uniform, one-directional training formats showed only a weak association with instructional practice change.

Hudson (2024) similarly notes that top-down, one-directional reform models (the "workshop model") have long been regarded as ineffective, a view reinforced by the systematic review of Vangrieken, Meredith, Packer, and Kyndt (2017), which found that collaborative teacher communities consistently produce more meaningful professional learning than isolated individual training. This paradigm shift aligns with Guskey's (2002) argument that genuine change in teachers' beliefs and attitudes typically occurs only after teachers experience a change in practice and observe its impact on student learning outcomes rather than the reverse—a finding that calls for PD designs that allow teachers room to try, reflect on, and adjust their practice on an ongoing basis, rather than merely receiving information in a single training session.

This need for a paradigm shift is consistent with teachers' fundamental nature as adult learners, who are, in principle, more appropriately approached through andragogy than pedagogy. Knowles (1980) articulated six foundational assumptions of andragogy: the learner's need to know the reason for learning something (need to know); the learner's self-concept as a self-directing individual; the role of experience as a rich resource for learning; readiness to learn as tied to social roles or developmental tasks; a problem-centered orientation to learning rather than a subject-centered one; and motivation that is driven more by internal factors such as job satisfaction and self-actualization than by external ones. These six principles remain a primary reference point for designing adult learning and training today (Clair, 2024; Knowles, Holton, & Swanson, 2015), and their application is consistently associated with increased engagement and learning effectiveness among participants in professional development contexts (Arutmayanti, 2023).

At the same time, the contemporary teacher professional development literature has produced several practical approaches with strong empirical evidence that are substantively aligned with andragogical principles, though rarely linked explicitly to one another within a single coherent framework. Professional learning communities (PLCs) emphasize collaboration among small groups of teachers to continuously reflect

on and refine instructional practice based on student learning data (Hudson, 2024; Vescio, Ross, & Adams, 2008). Instructional coaching emphasizes personalized, tiered mentoring from a coach or veteran teacher through cycles of classroom observation, feedback, and modeling, with meta-analytic evidence from 60 causal studies indicating effect sizes of 0.49 standard deviations on instructional quality and 0.18 standard deviations on student achievement (Kraft, Blazar, & Hogan, 2018). Meanwhile, teachers' autonomous motivation to continually learn and change is powerfully explained by self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2020) and self-efficacy theory (Bandura, 1997), both of which affirm that durable professional behavior change is driven more by internal motivation than by external pressure alone.

Although each of these three approaches- PLCs, instructional coaching, and the strengthening of autonomous motivation/self-efficacy is backed by robust empirical evidence, the existing literature generally examines them separately, without explicitly synthesizing them into a coherent andragogical framework. Even the most widely cited effective-features framework of PD, Desimone's (2009) model, identifies features such as content focus, active learning, coherence, duration, and collective participation, yet does not explicitly explain why these features are effective from the standpoint of adult learning theory, nor how the three contemporary approaches above might be organized into a single, mutually reinforcing PD cycle. As a result, school administrators and education policymakers frequently adopt one of these approaches in isolation (for instance, PLCs alone or coaching alone) without a conceptual framework that clarifies the structural relationships among them.

Building on this gap, this article aims to construct a conceptual model of teacher professional development that integrates Knowles' six andragogical principles with three contemporary professional development approaches- professional learning communities, instructional coaching, and the strengthening of autonomous motivation grounded in self-efficacy and to position this model relative to the well-established effective-features framework of PD in the literature (Desimone, 2009; Garet et al., 2001). The resulting model is intended to make a theoretical contribution by offering an integrative framework that bridges classical andragogy theory, motivation theory, and contemporary teacher professional development practice, and a practical contribution by offering an alternative design for PD programs that is more participatory, reflective, evidence-based, and sustainable for schools across various levels and contexts.

METHOD

This article was developed using the conceptual paper method, a form of scholarly writing intended to generate new ideas, models, or frameworks through the critical synthesis of existing literature, without involving primary data collection (Jaakkola, 2020). Following the typology proposed by Jaakkola (2020), this article adopts a synthesis approach, that is, combining two or more bodies of literature that have hitherto developed separately in order to produce a new, more integrative understanding or framework.

The model-building process was carried out in four stages. First, a literature search and mapping process was conducted across three bodies of literature: (a) adult learning and motivation theory, encompassing the classic works of Knowles (1980) and Knowles, Holton, and Swanson (2015), Mezirow's (1991) transformative learning theory, self-determination theory (Deci & Ryan, 2000; Ryan & Deci, 2020), and self-efficacy theory (Bandura, 1997; Tschannen-Moran & Hoy, 2001); (b) frameworks and empirical evidence on the effectiveness of teacher professional development, encompassing Garet et al. (2001), Desimone (2009), Guskey (2002), and Popova et al. (2021); and (c) literature on three contemporary professional development approaches, namely professional learning communities (Hudson, 2024; Vescio et al., 2008; Vangrieken et al., 2017; Voelkel & Chrispeels, 2017), instructional coaching (Elfarargy et al., 2022; Knight, 2007; Kraft et al., 2018), and communities of practice as the social foundation of collegial learning (Wenger, 1998).

Second, a thematic analysis of the three bodies of literature was undertaken to identify conceptual points of convergence among andragogical principles, motivational mechanisms, and the operating mechanisms of each professional development approach. Third, the model was constructed through cross-mapping between Knowles' six andragogical principles and the three contemporary professional development approaches, which were then synthesized into five model dimensions accompanied by their respective theoretical propositions. Fourth, the resulting model was mapped against the well-established effective-features framework of PD (Desimone, 2009; Garet et al., 2001), in order to demonstrate both continuity with, and novel contribution to, the existing literature.

The quality of the conceptual argumentation was maintained through three criteria commonly applied in the writing of conceptual articles: logical coherence across the model's dimensions, the novelty of the resulting synthesis relative to the existing literature, and the model's potential theoretical and practical usefulness (Jaakkola, 2020).

LITERATURE REVIEW

A. Andragogy Theory: Principles, Relevance, and Critique

Andragogy, as formulated by Knowles (1980), is the art and science of helping adults learn, built upon six foundational assumptions regarding the characteristics of adult learners: (1) the need to know the reason and benefit of learning something before undertaking it; (2) the learner's self-concept, which moves from dependency toward self-direction; (3) the role of experience as both a rich learning resource and a source of the learner's identity; (4) readiness to learn, tied to the social roles or developmental tasks the learner is currently engaged in; (5) a problem-centered orientation to learning, rather than a subject-centered one; and (6) motivation that is driven more by internal factors – such as job satisfaction and self-actualization than by external ones. Knowles, Holton, and Swanson (2015) affirm that these six principles remain a primary point of reference for designing adult learning and training today.

Nonetheless, Clair (2024) notes that andragogy has also drawn criticism over more than five decades, particularly regarding its limitations as a descriptive framework rather than a robust explanatory theory, as well as its tendency to overlook the power dynamics and institutional structures that constrain adult learners' autonomy in the workplace. This critique is highly relevant to teachers as adult learners, since teachers do not learn in a vacuum but within school bureaucratic structures that shape the extent to which the principles of self-directedness and problem orientation can genuinely be applied. Accordingly, the model developed in this article does not treat andragogy as a stand-alone framework, but integrates it with motivation theory and empirical evidence on effective PD features, in order to strengthen both its explanatory power and its contextual relevance.

B. The Effective-Features Framework of Teacher Professional Development

A national-scale study by Garet et al. (2001) of more than one thousand mathematics and science teachers in the United States identified three core PD features with significant effects on improvements in teacher knowledge, skills, and instructional practice: content focus, active learning, and coherence with school needs and policy. Structural features such as the form of the activity, the collective participation of teachers from the same school or subject area, and the duration of the activity were found to influence teacher learning primarily through these three core features. Desimone (2009) subsequently expanded this framework into five core features of effective PD: content focus, active learning, coherence, sufficient duration, and collective participation, which remains one of the most widely cited PD evaluation frameworks in the education literature to date.

Desimone's (2009) framework offers guidance on what features an effective PD program should contain, but is comparatively less explicit about the psychological mechanisms explaining why these features work for adult learners. This is precisely where andragogy theory can add explanatory depth: content focus and coherence align with the need-to-know and problem-orientation principles; active learning aligns with the principle of experience as a primary learning resource; while sufficient duration and collective participation align with the principle of readiness to learn as bound to social context, and with internal motivation that develops through sustained collegial relationships.

C. Autonomous Motivation and Self-Efficacy as the Motivational Basis of Teacher Learning

Self-determination theory (SDT), developed by Deci and Ryan (2000) and updated in Ryan and Deci (2020), explains that human motivation moves along a continuum from controlled motivation to autonomous motivation, and that the fulfillment of three basic psychological needs autonomy, competence, and relatedness is a precondition for the development of sustained autonomous motivation. Ryan and Deci (2020) specifically highlight that teachers, like their students, possess these same basic psychological needs, and that teachers working within autonomy-supportive

environments tend to display more autonomous teaching motivation as well as behaviors that support their students' autonomy. This principle directly reinforces Knowles' sixth andragogical assumption regarding internal motivation as the primary driver of adult learning.

Consistent with this, Bandura's (1997) self-efficacy theory explains that an individual's belief in their own capability to successfully perform a given task in this context, to teach effectively, influences how persistently that individual perseveres in the face of challenges and how open they are to changing their practice. Tschannen-Moran and Hoy (2001) conceptualize teacher self-efficacy as a construct shaped by four principal sources: mastery experience, vicarious experience, verbal persuasion, and physiological/affective states. The first three sources are directly relevant to PD design: mastery experience can be built through coaching cycles that provide room to gradually try out new practices; vicarious experience can be gained through peer observation within a PLC; while verbal persuasion can be reinforced through reflective feedback from coaches and peers alike.

D. Professional Learning Communities and Communities of Practice

A professional learning community (PLC) is a group of educators who collectively and continuously reflect on and refine instructional practice in order to improve student learning outcomes. Hudson (2024) proposes a conceptual framework of PLC effectiveness that positions enabling school structures and collegial trust as the foundation for collaborative reflective practice, which in turn drives change in teachers' knowledge, attitudes, and instructional practice. Systematic reviews by Vescio, Ross, and Adams (2008) and Vangrieken, Meredith, Packer, and Kyndt (2017) reinforce this finding, showing that effective PLCs are consistently associated with improved instructional practice and student learning outcomes although the quality of PLC implementation matters greatly, as PLCs that operate only superficially (termed "PLC lite" by Hudson, 2024) fail to produce meaningful impact.

The concept of a PLC can be traced back to Wenger's (1998) theory of communities of practice, which explains that professional learning is fundamentally social and situated, occurring through sustained participation in a joint enterprise, mutual engagement, and the development of a shared repertoire among community members. Voelkel and Chrispeels (2017) add empirical evidence that participation in a PLC correlates with increased collective teacher efficacy, a construct conceptualized by Goddard, Hoy, and Woolfolk Hoy (2000) as the shared belief among school members in their collective capacity to influence student learning outcomes—a construct that reinforces the link between the collegial dimension (PLC) and the motivational dimension (self-efficacy) within the model proposed in this article.

E. Instructional Coaching: Empirical Evidence of Effectiveness

Instructional coaching emphasizes personalized, tiered mentoring from a coach or veteran teacher to another teacher, through cycles of classroom observation, reflective

feedback, and modeling of best practice (Knight, 2007). Kraft, Blazar, and Hogan (2018) conducted a meta-analysis of 60 studies with causal designs and found a pooled effect size of 0.49 standard deviations on instructional quality and 0.18 standard deviations on student achievement among the strongest bodies of evidence available for the effectiveness of any single PD approach in the education literature, although they also note the challenge of sustaining such effectiveness when coaching programs are scaled up. Elfarargy, Irby, Singer, Lara-Alecio, Tong, and Pugliese (2022) enrich this finding by showing that teachers' perceptions of instructional coaching practices within a PLC context contribute to strengthened collaboration and sustained improvement in instructional practice, suggesting that coaching and PLCs can be mutually reinforcing rather than standing as two separate approaches.

F. Transformative Learning and Self-Regulation as a Reflective Lens

Mezirow's (1991) transformative learning theory explains that deep adult learning often involves a process of critical reflection on the assumptions and frames of reference an individual has long held, which in turn drives a shift in perspective. In the context of teacher PD, this process is relevant when teachers are invited to reflect on their own teaching assumptions through coaching feedback or collegial dialogue within a PLC, rather than simply receiving new teaching techniques instructionally. The capacity for this kind of reflection is also closely tied to the capacity for self-regulated learning, as explained by Zimmerman (2002): the ability of a learner to proactively set their own learning goals, monitor their progress, and evaluate their outcomes- a capacity that is a precondition for teachers to genuinely function as self-directed adult learners, as assumed in Knowles' second andragogical principle.

DISCUSSION

THE REFLECTIVE-COLLEGIAL TEACHER PROFESSIONAL DEVELOPMENT MODEL

A. Synthesis of the Five Model Dimensions

The literature synthesis presented in the previous section reveals a substantive alignment among Knowles' six andragogical principles, contemporary motivation theory, and three contemporary teacher professional development approaches with strong empirical evidence: professional learning communities, instructional coaching, and the strengthening of autonomous motivation grounded in self-efficacy. Based on this cross-mapping, this article proposes a conceptual model termed the Reflective-Collegial Teacher Professional Development Model (PGRK Model), consisting of five interrelated dimensions that serve as a framework for designing teacher professional development programs. These five dimensions are presented in Table 1.

Table 1. Synthesis of the Five Dimensions of the Reflective-Collegial Teacher Professional Development Model (PGRK Model)

Model Dimension	Andragogical Principle (Knowles)	Supporting Approach & Theory	Synthesis Description
1. Reflective Self-Readiness	Self-concept & readiness to learn	Self-assessment/reflection; self-regulation (Zimmerman, 2002)	Teachers undertake self-assessment and set their own learning goals before the PD program begins, so that engagement is voluntary and meaningful rather than merely compliance with a schedule imposed from above.
2. Collegial Experience	Experience as a learning resource	Instructional coaching (Knight, 2007; Kraft et al., 2018; Elfarargy et al., 2022)	Teachers' own teaching experience becomes the primary learning material, enriched through cycles of classroom observation, reflective feedback, and modeling by a coach or veteran teacher, consistent with meta-analytic evidence on coaching's impact on instructional quality.
3. Contextual Problem Orientation	Problem-centered orientation	Professional Learning Community/PLC (Hudson, 2024; Wenger, 1998; Vescio et al., 2008)	PD content is drawn from real problems in each teacher's own classroom, discussed collaboratively and reflectively within a small-scale PLC forum grounded in collegial trust and supportive school structures.
4. Autonomous Motivation Grounded in Self-Efficacy	Internal motivation	Self-determination theory (Deci & Ryan, 2000); self-efficacy (Bandura, 1997; Tschannen-Moran & Hoy, 2001)	Teachers' motivation to learn stems not only from external incentives but also from the fulfillment of needs for autonomy, competence, and relatedness, as well as the accumulation of small mastery experiences that build self-belief.
5. Sustained Tiered Mentoring	Need to know & self-directed guided learning	Sustained coaching; duration & collective participation features (Desimone, 2009; Garet et al., 2001)	PD is implemented as an ongoing process with tiered mentoring and adequate duration, rather than a one-off mass training session, creating space for continuous feedback and reinforcement of practice.

These five dimensions do not stand alone but form a continuous cycle. Reflective self-readiness (Dimension 1) serves as the entry point of the PD program, ensuring that teachers engage out of awareness of their own learning needs a process of self-regulation (Zimmerman, 2002) that lays the groundwork for autonomous motivation in the following stage. This readiness is then followed by collegial learning from experience (Dimension 2), in which a coach or veteran teacher accompanies the teacher through observation and reflective feedback on authentic teaching practice, consistent with Kraft et al.'s (2018) meta-analytic evidence on coaching's impact on instructional quality. This learning process is directed toward contextual problems discussed collaboratively within a PLC forum (Dimension 3), which, according to Hudson (2024), is effective only when grounded in supportive school structures and adequate collegial trust. The sustainability of this process is underpinned by autonomous motivation grounded in

self-efficacy (Dimension 4), which develops through the fulfillment of basic psychological needs (Deci & Ryan, 2000) and the accumulation of small mastery experiences over the course of the PD process (Bandura, 1997). The entire process unfolds within a scheme of sustained tiered mentoring (Dimension 5), which ensures the continuous reinforcement of practice, consistent with Garet et al.'s (2001) finding that duration and collective participation influence teacher learning primarily through other core PD features, rather than through the sheer number of training hours.

B. Position of the PGRK Model Relative to the Established Effective-Features Framework of PD

To underscore both the continuity and the novelty of the proposed model, Table 2 maps the five dimensions of the PGRK Model against the five core features of effective PD formulated by Desimone (2009), one of the most widely cited and empirically tested PD evaluation frameworks in the education literature (Garet et al., 2001).

Table 2. Position of the PGRK Model Relative to the Effective-Features Framework of PD (Desimone, 2009)

Effective PD Feature (Desimone, 2009)	Corresponding PGRK Model Dimension	Added Value of the PGRK Model
Content focus	Contextual Problem Orientation	Explains the social mechanism (PLC) through which content focus is discussed and collectively made meaningful, rather than merely delivered one way.
Active learning	Collegial Experience	Explains the specific mechanism (the coaching cycle: observation–feedback–modeling) that operationalizes active learning.
Coherence	Reflective Self-Readiness	Adds an initial self-assessment stage so that PD coherence with teachers' needs is built from the teacher's side, not only from the program designer's side.
Duration	Sustained Tiered Mentoring	Reframes duration not merely as a number of hours, but as the continuity of a gradual, tiered mentoring cycle.
Collective participation	Contextual Problem Orientation & Autonomous Motivation	Explains how collective participation cultivates collective teacher efficacy (Goddard et al., 2000), rather than merely administrative co-attendance.

The mapping in Table 2 shows that the PGRK Model does not contradict the established effective-features framework of PD, but rather provides a mechanistic explanation (how and why) underlying each feature by drawing on andragogical principles and motivation theory. The PGRK Model's principal contribution lies in three respects: first, it explicitly introduces a reflective self-readiness stage as the program's entry point, a stage relatively underemphasized in Desimone's (2009) framework; second, it directly links collective participation to the construct of collective teacher efficacy (Goddard et al., 2000) as a pathway of influence on practice change, rather than

mere co-attendance; and third, it reconceptualizes PD duration not merely as a number of hours, but as a tiered mentoring cycle that structurally approximates the instructional coaching design shown to be effective in large-scale causal studies (Kraft et al., 2018).

It is worth emphasizing what this integration adds beyond simply operating PLCs, instructional coaching, and self-efficacy-building activities side by side. Without an explicit andragogical frame, these three approaches are typically sequenced or selected administratively, based on resource availability rather than on a principled reading of why each mechanism matters to an adult learner at a given point in the professional-learning process. The PGRK Model instead specifies an ordering logic grounded in Knowles' principles: self-directedness before experience, experience before problem context, problem context before sustained motivation, so that the three approaches function as stages of a single reasoned cycle rather than as interchangeable, independently justified interventions. This ordering logic, rather than the individual components themselves, constitutes the model's principal theoretical contribution.

C. Contextual Factors and Potential Moderators

The PGRK Model should also be understood as a framework whose success depends heavily on contextual school factors. Hudson (2024) affirms that PLC effectiveness depends on enabling school structures and collegial trust, such that schools with individualistic work cultures and low interpersonal trust risk producing only superficial PLCs. Similarly, Ryan and Deci (2020) note that teachers working within tightly controlling environments tend to experience barriers to developing autonomous motivation, even when a PD program is technically well designed. Accordingly, school leadership support, a climate of trust, and initial levels of collective teacher efficacy (Goddard et al., 2000) are proposed as potential moderating variables that influence the strength of the relationship between PGRK Model implementation and change in teachers' instructional practice, and should be accounted for in future empirical tests of this model.

D. Theoretical Propositions

Based on this model synthesis, this article proposes five theoretical propositions that may serve as a basis for empirical testing in future research:

Proposition 1: The higher the level of teachers' reflective self-readiness built through self-assessment and independent goal-setting at the outset of a PD program, the higher their level of engagement as adult learners in that program.

Proposition 2: The more intensive the instructional coaching cycle (observation, feedback, modeling) received by teachers, the greater the transfer of learning experience into changed classroom practice, consistent with the effect sizes reported in Kraft et al.'s (2018) meta-analysis.

Proposition 3: PD programs whose content is drawn from contextual problems and discussed within a PLC forum grounded in supportive school structures and high

collegial trust produce a higher rate of training-transfer than PD programs with generic, uniform content.

Proposition 4: Teachers' autonomous motivation, built through the fulfillment of autonomy-competence-relatedness needs and self-efficacy, is positively correlated with the sustainability of instructional practice change after a PD program, beyond the influence of external incentives alone.

Proposition 5: PD programs designed as sustained, tiered mentoring produce higher levels of competence retention, collective self-efficacy, and teacher satisfaction than one-shot mass training formats

E. Theoretical and Practical Implications

Theoretically, the PGRK Model offers three principal contributions. First, it bridges classical andragogy theory with three contemporary teacher professional development approaches that have largely been examined separately in the literature, while adding a mechanistic explanation to the well-established effective-features framework of PD (Desimone, 2009). Second, it integrates contemporary motivation theory (self-determination theory and self-efficacy) to explain why teacher engagement in PD can be sustained over time an aspect relatively underdeveloped in earlier PD-features frameworks. Third, it offers a more coherent integrative framework for further research on PD effectiveness, including the opportunity to test the five proposed propositions through structural equation modeling.

Practically, the model offers several concrete recommendations for various education stakeholders:

- For school principals/administrators: establish small teacher working groups with dedicated coaching support, schedule self-reflection and goal-setting sessions prior to formal training, and build school structures that support collegial trust as a precondition for PLC effectiveness (Hudson, 2024).
- For education policymakers: design continuing professional development (CPD) guidelines that allocate duration and budget for sustained tiered mentoring rather than one-off centralized training, consistent with evidence that duration influences PD outcomes primarily through the active-learning and coherence features (Garet et al., 2001), and with the broader policy argument that sustained investment and coherent system-level support are preconditions for PD reform to take hold in practice (Darling-Hammond & McLaughlin, 2011).
- For teacher education institutions and training providers: integrate training in instructional coaching and PLC facilitation into the capacity-building programs for supervisors and veteran teachers, given that the quality of mentoring substantially determines coaching effectiveness (Kraft et al., 2018).
- For education researchers: use the five propositions of the PGRK Model as initial hypotheses for quantitative research or in-depth case studies on teacher PD effectiveness across various levels and school contexts.

F. Limitations and Future Research Agenda

As a conceptual study, the PGRK Model has several limitations that must be openly acknowledged. First, the model has not yet been empirically tested within any specific school context, so the strength of the relationships among its dimensions and the five proposed propositions remain hypothetical. Second, the model was synthesized largely from literature originating in developed countries (particularly the United States), so its application to school contexts in developing countries, including Indonesia, must take into account differences in education bureaucracy structures, teacher-to-coach ratios, and the availability of resources for sustained mentoring. Third, the model does not yet explicitly incorporate digital technology as a PD medium, even though the growth of coaching platforms and online learning communities may well shape how these five dimensions are implemented in practice.

Future research is recommended to test this model through quantitative studies, for instance, testing the five propositions using structural equation modeling with samples of teachers across multiple levels, as well as through in-depth qualitative studies in the form of case studies of PGRK Model-based PD programs implemented in specific schools. Future research is also encouraged to examine the role of moderating variables such as school leadership support and initial collective teacher efficacy (Goddard et al., 2000), and to explore the model's adaptation to different educational contexts, including schools with limited mentoring resources.

CONCLUSION

This article proposes the Reflective-Collegial Teacher Professional Development Model (PGRK Model) as a new conceptual framework for teacher professional development, built from a synthesis of Knowles' six andragogical principles, contemporary motivation theory (self-determination theory and self-efficacy), transformative learning and self-regulation theory, and three contemporary teacher professional development approaches with strong empirical evidence: professional learning communities, instructional coaching, and the strengthening of autonomous motivation. The model comprises five dimensions forming a continuous cycle—reflective self-readiness, collegial experience, contextual problem orientation, autonomous motivation grounded in self-efficacy, and sustained tiered mentoring—accompanied by five theoretical propositions open to empirical testing, together with an explicit mapping against the established effective-features framework of PD in the literature.

The principal contribution of this article lies in its effort to bridge three bodies of scholarship that have largely developed separately adult learning theory, motivation theory, and evidence-based teacher professional development practice into a single coherent and testable framework. Nevertheless, as a conceptual study, this model requires further empirical testing across a range of school contexts, particularly in developing countries, before it can be more broadly adopted as a guide for designing continuing professional development programs.

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