International Journal of Innovative Research and Scientific Studies, 8(4) 2025, pages: 2229-2241

IJIRSS
International Journal of Innovative Research & Scientific Studies

ISSN: 2617-6548

URL: www.ijirss.com

Monitoring the competence of continuous professional development of future and early-career teachers in the context of their self-development: A replication study

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Abstract

The resources, mechanisms, and organization of continuous professional development (CPD) for future and early-career teachers require research in the global context of educational reforms. The subject of the study is the monitoring of CPD competencies, which enables the diagnosis of its long-term and sustainable effectiveness in student training and teacher activities. The article examines the impact of monitoring on guided self-development aimed at more forward-looking goals than merely addressing difficulties, supported by stable intrinsic motivations for self-realization. The purpose of the study is to determine how, based on monitoring, students and teachers design guided self-development to confidently enter a profession that is becoming increasingly diverse and complex. Monitoring of CPD competencies is viewed in the study as the main method of self-development, while competition within the educational ecosystem creates an environment conducive to self-development. The continuity of a person's professional development is ensured through a comprehensive assessment of their readiness and abilities in dynamics from a current profile to a "progress bar." This dynamic, in turn, depends on factors identified through monitoring: meta-learning, the educational environment, and the professional community. The results of the study aim to improve the preparation of future teachers, design support programs for early-career teachers, develop a self-development ecosystem, and clarify the philosophy of professional growth.

Keywords: Competencies, monitoring, Competition, Essay, Continuous professional development, Early-career teachers, Future teachers, Self-development.

DOI: 10.53894/ijirss.v8i4.8359
Funding: This work is supported by the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant number IRN AP19678852).
History: Received: 19 May 2025 / **Revised:** 20 June 2025 / **Accepted:** 24 June 2025 / **Published:** 7 July 2025

Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.
Transparency: The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Institutional Review Board Statement: The Ethical Committee of Kozybayev University, Kazakhstan, has granted approval for this study on 5 September 2023 (Ref. No. KU122/258E).
Publisher: Innovative Research Publishing

1. Introduction

Continuous professional development (CPD) for future and early-career teachers (with up to five years of experience) faces organizational challenges both in universities and workplaces. The reasons for this issue are as follows:

a) The broad scope of CPD, which overlaps in its goals, forms, and methods with academic and professional activities, causes disorientation among students and teachers in organizing their development.

b) The underdevelopment of the training system aimed at forming CPD competencies in integration with subject-specific and pedagogical ones limits the development of students and teachers to simply addressing deficits in learning or professional performance;

c) CPD in universities and workplaces is often mass-oriented and standardized, failing to meet the individual needs of students and teachers or the expectations of educational institutions, resulting in unstable development outcomes.

The initial research conducted by the authors describes meta-learning in the professional training of future teachers, with a focus on CPD.

As part of a conceptual replication of the original study, the aim of the present research is to determine the impact of CPD monitoring on the self-development of future and early-career teachers and to clarify prospects for further studies in this area. This research addresses a gap in theory and practice related to systematic, standardized observation of CPD dynamics in future and early-career teachers in order to gather data that defines the pace and modes of self-development.

Research Questions:

RQ 1. What are the principles for selecting diagnostic tools to monitor the CPD level of future and early-career teachers?

RQ 2. How can data from CPD monitoring be used to stimulate guided self-development in future and early-career teachers?

Given the research questions, the main hypothesis was formulated as follows: If the content of CPD monitoring for future and early-career teachers is defined, then the application of its results to guided self-development becomes personalized, since individuals engaged in self-development, possessing this data, can consciously and purposefully design their trajectory toward academic and professional achievements.

Auxiliary hypothesis: Even when the monitoring processes and results are similar for future and early-career teachers, the pace and level of their self-development may differ due to the different focuses of their outcomes, since future teachers primarily aim their self-development at personal growth, while early-career teachers direct it both at themselves and their students.

Let us consider the current state of research in this field.

Educational monitoring has a broad scope of studied impacts, including: teacher supply and demand in the context of teacher attrition [1]. The education sector and labor market, enabling timely diagnosis and resolution of professional and pedagogical deficits [2], improved management of effectiveness in public universities through strategic performance evaluation systems, student health, and safety in the context of the Internet, influencing higher education.[3] holistic development of primary school children through personalized progress monitoring [4], Better classroom discipline management through software tools [5].

Thus, educational monitoring serves as a tool for addressing global challenges due to its numerous functions and ability to operate with "rich data". In Kazakhstan, the Rules for Implementing Educational Monitoring have been adopted [6], which defines it as «systematic observation, analysis, evaluation, and forecasting of the state and dynamics of results and conditions of educational processes, student populations, institutional networks, and rating indicators of the performance of educational organizations».

The subject of monitoring «improving the quality of future and practicing teachers» has been explored in the following studies: Abakah et al. [7], the direction of CPD improvement for teachers in distance learning contexts [7, 8]. Comprehensive evaluation of teacher professional development to enhance the quality of formal education programs (courses, seminars) [8]. Monitoring as a tool for managing the quality of social and pedagogical education programs [9]. Development and implementation of an educational quality monitoring system, including the creation of a self-assessment tool for future teachers' pedagogical competencies [9].

Despite the broad scope of research on monitoring and the diversity of its subject matter, there remains a gap, specifically in the use of monitoring as a tool for self-development among future and early-career teachers within the framework of guided CPD. LARVIN, et al. [10] In their article *"Teacher Development: Measuring What Matters,"* they state: "Recognizing the complexity of teacher development and the difficulty of assessing its impact on student outcomes, it is clear that the evaluation process requires triangulation of multiple sources of evidence" [10] Argue: "Although considerable research has been conducted on the characteristics of high-quality TPD [Teacher Professional Development], there is still a lack of standardized instruments capable of accurately assessing TPD quality. To enhance the effectiveness of TPD programs, it is essential to develop tools that can reliably measure and evaluate their quality" [8]. An international group of researchers from Germany, Uruguay, and the United States (2025), studying the impact of professional development programs on formative assessment practices, identifies a methodological challenge: "The dynamic and context-dependent nature of implementing formative assessment complicates the assessment process, making it difficult to establish unified criteria for evaluating its impact" [11].

The monitoring of CPD in the context of self-development is closely linked to metacognition. Craig, et al. [12] point out the problem: "Because metacognition is defined as awareness of one's own thinking processes, and is therefore not easily observable, it is difficult to measure"[12]. Similar issues are noted by P. Seban et al., who write: "Inaccurate measurements can mislead subsequent adjustments to interventions or their evaluations, ultimately undermining the overall goal of improving learners' metacognitive abilities. This gap implies that interventions aimed at enhancing metacognitive skills may be more effective if they include both offline and online assessments to monitor various dimensions of metacognitive performance" [13].

This study addresses the identified gap and proposes an approach to measuring and assessing CPD competencies for the personalized self-development of students and early-career teachers.

2. Materials and Methods

This study is grounded in Hacker, et al. [14] 's Assertion that metacognition consists of the merging of two mutually motivating processes: the development of knowledge about one's own cognitive processes and the monitoring of progress toward learning goals through metacognitive awareness. Hacker, et al. [14] affirm the importance of the second process, stating: "Metacognitive control refers to how well a person can regulate their own learning" [13].

The proposed concept of meta-learning aims to develop CPD competencies. These include cognitive, acmeological, socio-behavioral, and digital skills, abilities, and personal qualities of future and practicing teachers, which are directed toward selecting and implementing strategies for learning and self-development based on metacognition, self-organization, and self-regulation.

CPD activates metacognition, and CPD competencies, in turn, engage metacognitive processes. For effective metacognitive control, we propose monitoring CPD competencies. These interrelations are illustrated in Figure 1.

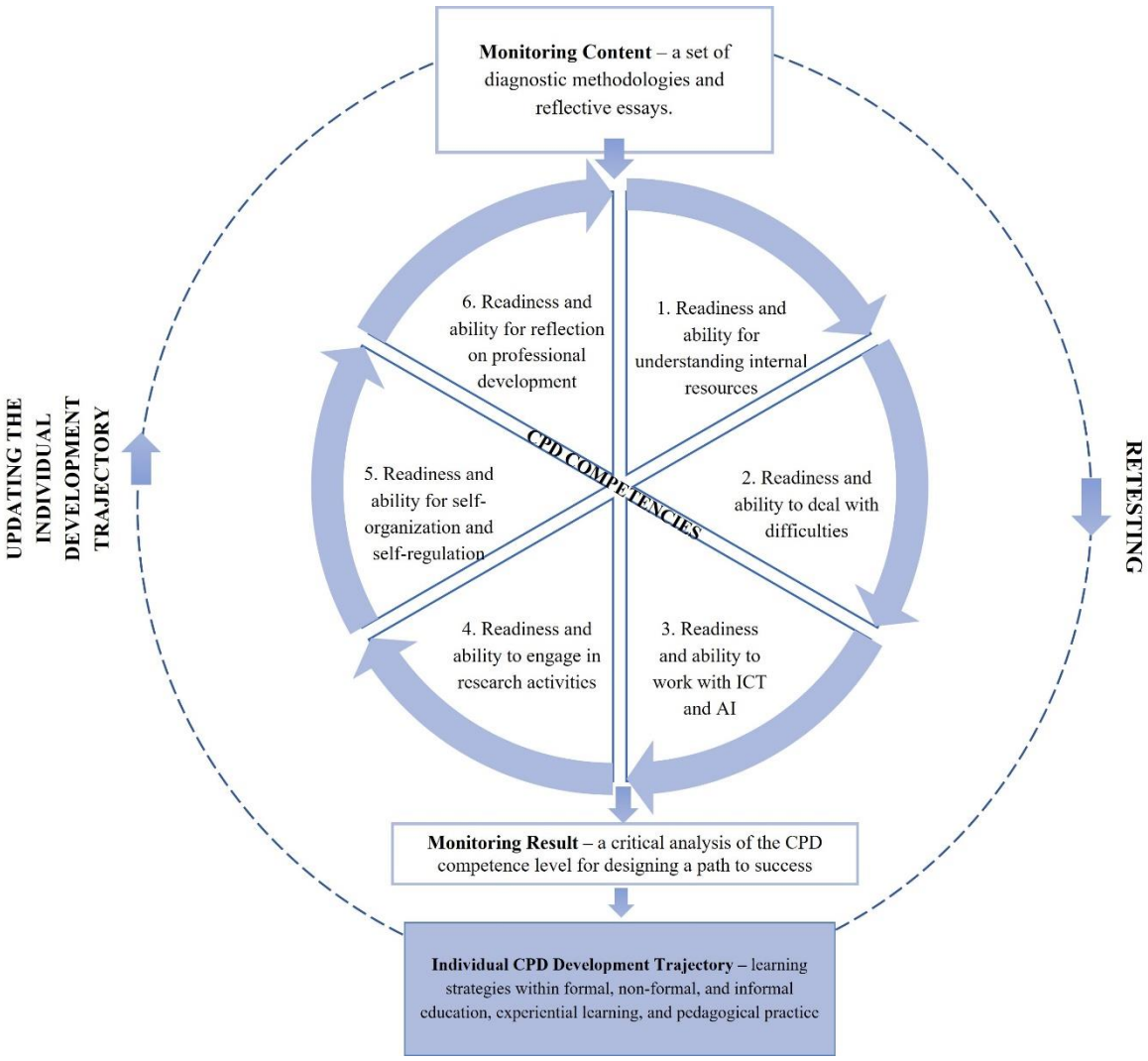

Figure 1.
CPD Competencies as the Subject of Monitoring Oriented Toward Self-Development.

Observation of meta-learning in students and the activities of early-career teachers enabled the clarification of CPD characteristics. These insights informed the selection of diagnostic tools for monitoring, guided by the following fundamental principles and methodological positions:

- Integrity, systemacity, multidetermined nature, and multi-directionality of teachers' professional development [15-17]
- Structural complexity, multicomponent nature, and internal determination of the personal-professional outcomes of CPD for teachers, such as *readiness for professional activity* (during initial training) and *professional competence* (during actual teaching). Key structural elements include motivation for CPD, reflectiveness, self-regulation, and self-organization [18, 19]
- Contemporary pedagogical diagnostic standards in the field of CPD include studying personality through activity, voluntary participation, age-appropriate methods, partnership-based interaction, and diagnostic methods that are comprehensive, objective, reliable, valid, representative, replicable, and developmental in nature, while being non-intrusive or non-traumatizing [20].

The target groups for monitoring include third- and fourth-year undergraduate students and early-career schoolteachers. These groups are characterized by shared traits: 1) A strong connection to formal education experiences; 2) A desire for psychological safety within the educational environment; 3) A need for humane and responsive mentorship; 4) A tendency toward open communication, interaction, and partnership, due to a small age gap; 5) Similar reactions in situations requiring protection from excessive demands by instructors, administrators, or colleagues; 6) Aspirations for career advancement, which increase as requirements for entry into teacher education programs and for teachers in general become more stringent (in Kazakhstan, the term *early career teachers* has been adopted) [21] and attestation regulations now demand high-level competencies [22].

The inclusion of early-career teachers also responds to an alarming trend: "In 2023, 26% of teachers in educational institutions in Kazakhstan had less than five years of experience" [22]. At the same time, the proportion of teachers who left the profession within the first three years was 12.26% in 2021 and 10.91% in 2022, with a total three-year attrition rate of 21.84% [23].

The research base includes the Faculty of Education at M. Kozybayev North Kazakhstan University (Petropavl),

Secondary School No. 4 (Petropavl), "Parasat" Lyceum School, and Beskol Secondary School No. 2 (Kyzylzhar district, North Kazakhstan region).

The purposeful sample for monitoring (April–May 2024) included 124 students enrolled in the following teacher training programs: 6B01101 “Pedagogy and Psychology,” 6B01103 “Psychology in Education,” 6B01201 “Preschool Education and Upbringing,” 6B01301 “Pedagogy and Methods of Primary Education,” 6B01302 “Primary Education and Inclusive Practice” (KZ-US), 6B01311 “Primary Education and Inclusive Practice” (US), and 27 early-career teachers.

The systematic sample represents typical members of the general population and includes a 100% coverage of third-year (79) and fourth-year (45) students who participated in four semesters of meta-learning focused on developing CPD competencies.

The non-probability sample included teachers from one urban and two rural schools who voluntarily expressed interest in participating, took part in a year-long School of Professional Development program (with monthly sessions aimed at mastering informal and non-formal education tools), and were selected due to convenient access.

The stratified nature of the sample reflects the division into future and early-career teachers. Sample representativeness is ensured by voluntary and motivated participation, sufficient diversity among CPD subjects, the intensity of the phenomenon being studied, and the ability to provide personally significant data related to university education and school teaching.

In accordance with informed consent protocols, participation in the monitoring process was voluntary and confidential, and all participants were over the age of 18 at the time of the study. The study received approval from the Kozybayev University Ethics Committee.

According to the main hypothesis, CPD competencies help participants adapt to the expanding, increasingly diverse, and complex nature of teaching (a factor pushing individuals out of the profession amid complex social dynamics) and enable them to design long-term self-development trajectories.

3. Results and Discussion

We now turn to the results of diagnosing CPD competencies as part of the monitoring process.

CPD Competency 1. Fifteen diagnostic statements assessing the ability for self-development [24] were classified to clarify the resources for self-development, as shown in Table 1. The verbal rating scale provided in the questionnaire instructions was interpreted as levels of readiness and ability to recognize and engage with internal resources. Numerical values are derived from survey data and are presented as arithmetic means. In Table 1 and throughout this article, values in the numerator refer to future teachers, and those in the denominator refer to early-career teachers.

Table 1.
Levels of Readiness and Ability to Recognize Internal Resources for Self-Development.

Self-Development Resources	Share of the respondents (%) among future / early-career teachers by level of readiness and ability to recognize internal resources				
	Awareness and consistent application	Situational understanding and application	Partially unconscious application	Normal application	Rejection
Motives and Goals (statements 1–3)	37.1/55.5	38.7/25.9	14.5/11.1	6.4/3.7	3.2/3.7
Tools of Self-Development (statements 4–8)	34.7/37	37.1/33.3	14.5/18.5	9.7/7.4	4/3.7
Personal Traits (statements 9–11)	31.5/33.3	36.3/37	16.9/18.5	12.1/7.4	3.2/3.7
Outcomes of Self-Development (statements 12–15)	37.1/40.7	30.6/40.7	22.6/11.1	7.3/7.4	2.4/0

Experimental findings: 90.3/92.4% of respondents are aware of their motives and goals, demonstrating understanding and application in their self-development; 86.3/88.8% understand and apply tools for self-development consistently, situationally, or with partial awareness; 84.7/88.8% rely on personal traits in their self-development; 90.3/92.4% understand and apply the outcomes of self-development to varying extents. At the same time, a portion of respondents demonstrate formal use or rejection: motives and goals - 9.6/7.4%; tools of self-development - 13.7/11.1%; personal traits

- 15.3/11.1%; outcomes: 9.7/7.4%. These results confirm the need to create an environment that stimulates ongoing self-development for both students and early-career teachers.

CPD Competency 2. 14 diagnostic statements [25] adapted by the authors to assess readiness and ability to work through challenges, were classified as self-development processes in working with difficulties, represented horizontally in Figure 2. The verbal scoring system was interpreted into three levels of readiness and ability to manage challenges (shown vertically): high (34–42 points), medium (21–33 points), low (up to 20 points). Numerical results were calculated based on survey responses.

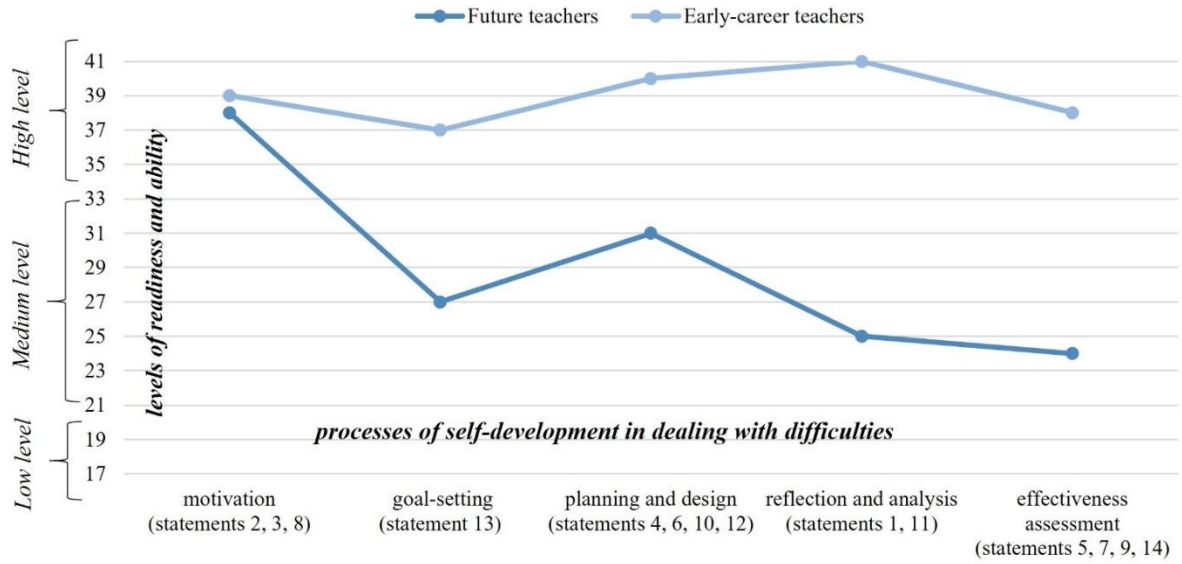

Figure 2.
Levels of Readiness and Ability to Work Through Difficulties Based on Identified Processes.

Experimental findings: the curve representing the readiness and ability of early-career teachers is smoother and remains within a high level, which supports the auxiliary hypothesis; the corresponding line for future teachers is more jagged (especially between motivation and goal-setting, and from planning/design to reflection/analysis) and demonstrates a dynamic shift from a high to a medium level, confirming the importance of continued self-development in overcoming professional challenges.

CPD Competency 3. 17 diagnostic questions assessing the level of ICT (*Information and Communication Technology*) competence and the use of AI (*Artificial Intelligence*) in educational activities [26] were classified to clarify components of the respondents' professional self-development.

A quantitative-qualitative analysis of responses was interpreted into levels of readiness and ability for digital self-development, aligned with the depth of mastery and applicability of digital resources. This made it possible to construct a comparative model reflecting both the level of digital competencies and the degree of their integration into educational practice (Table 2).

Table 2.
Levels of Readiness and Ability to Use ICT and AI Among Future and Early-Career Teachers.

Diagnostic area	Share of respondents (%) among future / early-career teachers by level of readiness and ability to use ICT and AI			
	Consistent application	Contextual application	Normal application	Rejection
Basic ICT Skills (questions 1–3)	74.2/37.0	21.8/51.9	2.4/7.4	1.6/3.7
Professional ICT Actions (questions 4–9)	58.1/37.0	33.1/48.1	7.3/11.1	1.6/3.7
Use of AI (questions 10–17)	47.6/29.6	36.3/40.7	12.1/18.5	4.0/11.1

Figure 3 presents a comparative distribution of affirmative ("Yes") responses for each component of ICT competence, which further reveals the differences in confidence levels between future and early-career teachers across areas of digital activity.

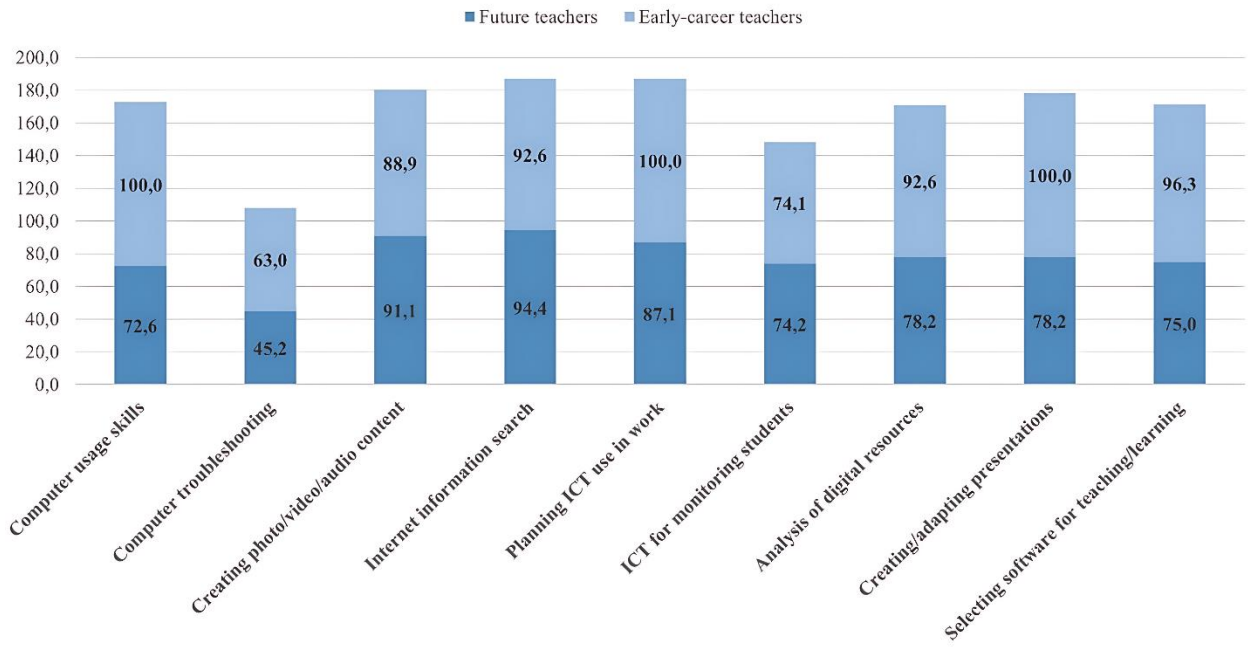

Figure 3.
Comparison of ICT Competence Levels Between Future and Early-Career Teachers.

Experimental findings indicate that future teachers demonstrate higher digital confidence and more active use of ICT and AI than early-career teachers, whose practices are more often limited to contextual application. These differences reflect a higher level of digital preparedness among future teachers, partially supporting the auxiliary hypothesis in the digital dimension, and suggest a high level of digital thinking among students. The diagnostic results confirm the need for systematic support of digital competencies at all stages of CPD, with a focus on methodological readiness to integrate AI into educational practice, which is achievable through self-development.

CPD Competency 4. The 14 diagnostic statements from "Possession of Research Skills" [27] were classified according to types of higher-order thinking skills: hypothetical (predicting outcomes in the problem-solving process); experimental (identifying potential problem-solving strategies and limitations); conceptual (analyzing basic concepts while structuring the problem). These types of metacognitive thinking can help students become individuals capable of solving problems and making effective decisions in real-life situations [28]. High, medium, and low levels of skill manifestation were determined according to the verbal-point scale of the diagnostic tool and are presented in Table 3. The numerical values are the arithmetic means based on survey data.

Table 3.
Levels of Readiness and Ability for Research Activity.

Types of Metacognitive Thinking	**Share of respondents (%) among future / early-career teachers by level of readiness and ability for research activity**		
	Highly conscious and consistent skill application	**Medium - contextual understanding and application**	**Low - from formal use to rejection**
Hypothetical thinking (statements 1–4)	69.3/74.1	26.7/22.2	4/3.7
Experimental thinking (statements 5–12)	85.5/88.9	8.9/7.4	5.6/3.7
Conceptual thinking (statements 13–14)	83.8/88.9	13/11.1	3.2/0

Experimental Findings: 79.5/83.9% of respondents at the high level predict the influence of CPD methods on learning or professional progress, plan their application, and analyze observed changes, establishing the link between self-development and improvement in teaching/professional quality; 16.2/13.6% of respondents require practical reinforcement of these skills; 4.3/2.5% of respondents may be at risk, as they ignore self-development processes. These findings confirm the importance of self-development through research activity.

CPD Competency 5. 25 statements from the *"Activity Self-Organization Questionnaire"* [29] were grouped into five factor scales. The score for each scale was calculated by summing the values assigned to the relevant items. The level-based interpretation of results is presented in Table 4.

Table 4.
Levels of Readiness and Ability for Self-Organization and Self-Regulation.

Scales of Activity Self-Organization	Share of respondents (%) among future / early-career teachers by level		
	High level	Medium level	Low level
Consistency in activity (statements 2, 4, 8, 11)	20.2/22.2	74.1/74.1	5.7/3.7
Goal-directedness in activity (statements 7, 14, 18, 20, 23, 25)	22.6/18.5	70.9/70.5	6.5/3.7
Persistence in exerting volitional effort (negative values of statements 1, 5, 10, 15, 21	16.1/18.5	71.8/81.5	12.1/11.1
Fixation on structuring activity (statements 3, 6, 13, 17, 24)	13.7/14.8	72.6/74.1	13.7/11.1
Self-organization through external resources (statements 16, 19, 22)	10.6/14.8	79.0/79.2	10.0/6.0
Present orientation (statements 9, 12)	13.7/18.5	78.2/77.8	8.1/3.7

Experimental findings: only 16.2/17.9% of respondents demonstrate a high level of self-organization and self-regulation skills. The majority, 74.4/76.2% show medium-level performance: over two-thirds act according to the *"here and now"* principle, are less goal-oriented and persistent, and rely on external resources. 9.3/6.5% of respondents encounter difficulties in applying a structured approach to self-organization and using a variety of self-regulation tools. In our study, monitoring is understood primarily as the metacognitive thinking of future and early-career teachers regarding the organization and regulation of acquiring knowledge, skills, and attitudes in the CPD domain. The levels demonstrated confirm the relevance of creating a self-development environment and highlight the need for diverse approaches in the context of the intentional practice of the diagnosed skills.

CPD Competency 6. The stimulus material *"Methodology for Diagnosing the Level of Reflexivity"* [29] includes 27 statements used to determine readiness and ability for professional development reflection on a 7-point scale. Scoring was done in accordance with the methodology's instructions. The data were interpreted considering the quantitative indicators and differentiated by three levels, presented in Table 5.

Table 5.
Levels of Readiness and Ability for Reflective Professional Development.

Respondent Category	Share of respondents (%) by levels of development of readiness and ability for reflection on professional activity		
	low (0-113 points)	medium (114-139 points)	high (140 points or more)
Future teachers	6.4	83.1	9.6
Early-career teachers	3.7	81.5	14.8

Experimental Findings: 9.6/14.8% of respondents are able to analyze their self-development trajectory in detail, consciously plan further progress based on their strengths, and identify resources for improvement. A significant majority at the medium level lack confidence in analyzing their development experience and in planning the next steps. They also face challenges in making informed decisions regarding the use of effective CPD resources and tools. Respondents at the low level, though engaged in reflection, struggle to transform practice into actionable experience, which hinders long-term conscious improvement. These results confirm the need for a self-development environment in which reflective processes are personally meaningful and essential to CPD.

The monitoring process was supported by discussion and analysis of data with respondents, as well as personalized evaluation and progress forecasting, based on ongoing managed self-development. The most effective means and conditions for fostering self-development were identified as a competitive environment, encouraging interaction among academic, professional, and metaskills of participants as they move toward achievement. In the 2024–2025 academic year, meta-learning was enriched with competitions focused on CPD.

Creating a competitive environment for future and early-career teachers stimulates self-development that is driven by the individuals themselves and is in demand in the context of holistic education [30].

A professional competition within the CPD ecosystem (Competition) functions both as an assessment tool and a mechanism for identifying and encouraging the most engaged agents of self-development, those who demonstrate practical integration of CPD competencies into professional training and teaching practice.

The organization of the competitive environment was guided by the following principles: participation in competitions "stimulates students' learning motivation as well as professional motivation, leading to their subsequent employment in the field" [31] for teachers, participation provides for the development of their self-efficacy through the interaction of such factors as cognition, practice, reflection, feedback, and interpersonal support" [32]. Thus, the competitive environment unites both future and early-career teachers, facilitating professional readiness, employability, and retention in the profession.

The competition presumes innovative activity within the context of global education, understood as: "a systematic activity aimed at the creation, assimilation, and application of new tools; a process of interaction between individuals directed toward the development and transformation of an object into a qualitatively new state; a special type of creative

activity that integrates various operations and actions aimed at acquiring new knowledge and creating technologies and systems" [33].

Let us justify the potential of guided self-development in a competitive environment.

A competition within the CPD ecosystem places participants in the context of "growing competition for educational success," where *"losing at the start"* is associated with the metaphor of education (and life) as a race [34], a setting in which even failure can foster experience for future victories. The competition unites external and internal motivations for CPD through a focus on progress, demonstration of individual achievements, and alignment with the global trend of continuous improvement.

Voluntary participation in the Competition aligns with the nature of self-development and reinforces participants' agency within a healthy competitive context. In organizing the Competitions, we adopt the perspective of *The Learning Lab*, which emphasizes self-development by: "encouraging people to surpass their previous expectations," where "the journey is as important as the destination," and where "learning and growth are the real prizes" [35].

Competitions accompany and complement the educational process as they are not isolated events but an integral part of it. Their content reflects a broad spectrum of CPD-related topics, motivating widespread participation. Our approach differs from traditional views that treat competitions as occasional and disconnected from students' real needs, learning objectives, and metacognitive development. Future and early-career teachers understand that competition participation helps them: "adapt more quickly to future professional activity, build their career path, increase competitiveness, develop professional qualities, boost self-confidence, and acquire teamwork skills" [36].

The content of the Competition is aligned with personalized CPD and enables participants to highlight their unique strengths according to their self-development needs and experiences. It is characterized by the integration of theory and practice, a blend of professional training and self-realization, and a commitment to the meanings and values of professional growth, which is illustrated in Table 6.

Table 6.
Competition Content in the CPD Ecosystem.

Competition title – Competition material	**Core idea**	**Objective**	**Expected Outcome**
Staying on Course for Development - a motivational essay on the topic: "Multitasking or Education: My Choice" (includes bibliography and recommendations, word limit – up to 600 words)	The choice of strategy defines how students/teachers enhance their learning/professional activities	To identify convincing arguments for choosing the strategy of *Multitasking or Education*, supported by evidence from educational or professional experience.	Adaptation of *Multitasking* and/or *Education* methods and resources to individual CPD processes.
Lifelong, Lifedeep, Lifewide Learning: SUCCESS DIARY - a reflective report on organizing one's own education (formal, non-formal, informal), documented with academic transcripts, certificates, diplomas, publications, etc.	The selection of educational resources shapes the forms and content of self-development	To identify effective practices in applying these resources to solve pedagogical/professional problems.	Integration of formal, non-formal, and informal education into the processes of continuous professional development (CPD), which aligns with the educational policy of Kazakhstan, On approval of the Rules for the implementation of educational monitoring [37].
Improvement Through Development - an argumentative essay *"What Success in My Professional Development Looks Like"* (up to 600 words), along with a video	The integration of subject and pedagogical competencies with CPD competencies ensures sustainable improvements in learning and professional activity.	to identify best CPD practices that reflect students'/teachers' values and meaning-making during entry into the profession	Sustainable motivation for CPD among students and early-career teachers.

Competitions involved writing essays and reflective reports based on analytical, critical, and reflective thinking, as well as design thinking for problem-solving. Creating these texts served as a "growth point" in both verbal-logical thinking and self-development.

The results of the monitoring of contest submissions, evaluated according to criteria and descriptors, are presented in Table 7.

Table 7.
Competition Results among Future and Early-Career Teachers.

Contest Title – Contest Material	Number of Participants, including by Program / Coverage in %	**Key Results and Related Statistical Data**
Staying on Course for Development was held from 05.09 to 05.10.2024.	6B01101 "Pedagogy and Psychology" – 19 students (76%) 6B01103 "Psychology in Education" – 9 students (100%) 6B01201 "Preschool Education" – 10 students (83.3%) 6B01301 "Pedagogy and Primary Education Methodology" – 43 students (86%) 6B01302 "Primary Education and Inclusive Practice" (KZ-US) – 10 students (83.3%) 6B01311 "Primary Education and Inclusive Practice" (US) – 12 students (75%) Total number of students: 103 (83.1%) Early-career teachers: 27 (100%)	Choice Options (a small number of participants chose MULTITASKING: 3.9/3.7%): a) Balance between EDUCATION and MULTITASKING strategies (8.7/29.6%): Participants acknowledged the need to combine both strategies, as the first (EDUCATION) fosters awareness of activity through meaning-making, while the second (MULTITASKING) provides fast and multidirectional results. b) Priority given to the EDUCATION strategy (87.4/66.7%): Participants preferred continuous education, justifying their choice with its reliable and long-term impact on the quality of learning and teaching activities, often including non-formal education as well. Preferred reasons for the choice: a) Digital transformation of the world and the need to develop digital skills: 46.6/22.2%; b) The diverse and increasingly complex nature of professional activity: 28.1/51.8%; c) Interdisciplinarity and multi-professionalism in a complex society: 14.6/11.1%; d) Interest in the teaching profession and self-development processes within it: 10.7/14.8%.
Lifelong, Lifedeep, Lifewide Learning: SUCCESS DIARY was held from 15.01 to 20.03.2025	"Pedagogy and Psychology" – 23 students (92%) "Psychology in Education" – 9 students (100%) "Preschool Education" – 11 students (91.7%) "Pedagogy and Primary Education Methodology" – 48 students (96%) "Primary Education and Inclusive Practice" (KZ-US) – 10 students (83.3%) "Primary Education and Inclusive Practice" (US) – 15 students (93.7%) Total number of students: 116 (93.5%) Early-career teachers: 27 (100%)	Observed Trends in Describing Achievements: a) Formal education is less diverse but dominates over non-formal and informal learning for 50.9% / 37% of participants. Future teachers mostly listed coursework, internships, and thesis preparation. Early-career teachers noted completion of undergraduate and postgraduate (master's) education and certified professional development courses. Formal education was associated with subject-methodological training, lesson planning, and student interaction skills. b) Non-formal education was considered second in importance by 35.3% and 33.3% of participants. The most cited activities (in descending order) included active participation in trainings, seminars, webinars, coaching sessions; taking online courses on Coursera and other platforms; preparing conference presentations; participating in student and professional competitions; and collaborating in professional community groups. c) Informal education is ranked third in importance, with 13.8/29.6%. Reported achievements (in descending order) include reading professional literature, learning English via online resources, working as camp counselors, visiting educational and correctional centers, watching educational films, networking with professionals, joining debate clubs and youth organizations, volunteering, and creating educational event mobile content.
Improvement Through Development was held from 25.03 to 10.05.2025	"Pedagogy and Psychology" – 24 students (96%) "Psychology in Education" – 9 students (100%) "Preschool Education" – 10	The argumentative essay enabled participants to reflect on their own experiences, articulate their understanding of success in CPD, critically evaluate their role in achieving it, and propose their own improvement ideas. In such essays,

	students (83.3%) "Pedagogy and Primary Education Methodology" – 47 students (94%) "Primary Education and Inclusive Practice" (KZ-US) – 12 students (100%) "Primary Education and Inclusive Practice" (US) – 14 students (87.5%) Total number of students: 116 (93.5%) Early-career teachers: 27 (100%)	argumentation is viewed as a vital component [38]. 55.2% of future teachers and 40.7% of early-career teachers described their CPD achievements, while 44.8% and 59.3% focused on the underlying reasons for those achievements, demonstrating critical thinking and reflective skills. Structured argumentation, indicative of a high level of self-development, was evident in the essays of 29.3/48% of participants.

The contest environment confirmed the effectiveness of educational intervention in boosting intrinsic motivation for self-development. As a result: 1) Experience in academic writing led to improved writing skills, marked by a shift from unplanned and impulsive writing to thoughtful reflection on paper [39]; 2) Written identity has evolved into academic, personal, and professional forms, allowing contest materials to be examined from a dual perspective: as an academic genre and as a professional development practice. [39, 40] 3) There was a noticeable enhancement in skills related to analysis, synthesis, product creation, and evaluation; 4) habits of reflection developed, which will benefit students in other areas of learning and in the workplace [41].

Self-development along these lines supports the trend that students with a fixed mindset and low orientation toward CPD tend to avoid writing essays, while those with a growth mindset and CPD-related goals are eager to adapt their existing writing strategies to produce essays [42].

4. Conclusion

The results of the study provide answers to the research questions.

RQ1. The principles for selecting diagnostic methods were identified and grouped based on the characteristics of professional development and the structure of its outcomes during the journey into and entry into the profession, as well as considering the methodology and ethics of diagnostic procedures. Adherence to these principles made it possible to define the monitoring content in two functions: as a method for assessing the level of CPD of future and early-career teachers, and as an effective mechanism for designing individualized trajectories of guided self-development.

RQ2. The contest environment, which activates the meanings and values of CPD, contributes to the formation of intrinsic motivation for self-development among future and early-career teachers. It fosters the development of metacognitive and metathinking skills, self-organization, and self-regulation in designing their own CPD, as well as active engagement in the professional community.

The answers to the research questions confirm the main hypothesis. In the context of an increasingly complex educational reality and growing demands on teacher training, monitoring CPD competence allows for a transformation in the approach to supporting professional development, from locally addressing difficulties to a strategically structured developmental process with a focus on conscious goal-setting. The monitoring data also confirms the auxiliary hypothesis.

The findings of the study can be used in the development of innovative teacher education and professional development programs, in the design of university educational processes, in workplace professional development programs, and in analytical research on teacher quality.

However, this study is not without limitations. First, the monitoring content primarily focuses on analyzing and evaluating the current state of CPD. The analysis and evaluation rely heavily on extensive survey-based diagnostic tools and their qualitative and quantitative interpretations. Nevertheless, observation and forecasting of the dynamics of self-development within a competitive environment contribute to a more comprehensive long-term view of CPD, especially during the transition from student status to practicing teacher. Second, the internal motivation of students and early-career teachers requires deeper investigation. Monitoring CPD competencies provides insights into motivation as a readiness for exploring internal resources, working through challenges, using ICT and AI, engaging in research, self-organization, self-regulation, and reflection. At the same time, the *direction* of motivation is critical for the pace and depth of self-development, whether it is focused on short-term academic tasks or long-term professional goals, including learner-centered teaching. Third, it is necessary to analyze the factors that facilitate or hinder the involvement of students and early-career teachers in competitive environments under conditions of *scaffolding*.

These limitations highlight the need for future research using more comprehensive data collection methods, particularly longitudinal studies with multiple data points and in-depth investigations into the impact of monitoring on the quality of meta-learning and meta-teaching, the organization of CPD within universities and professional communities, and the development of support programs within the CPD ecosystem.

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