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Reflective Skills of Future Primary School Teachers in Inclusive Education: A Structural-Functional Model

Abstract

Introduction. The article addresses the need to develop reflective skills in prospective primary school teachers, driven by the shift from formal integration to genuine inclusion. The study aims to provide a theoretical rationale and develop a structural-functional model for developing reflective skills in prospective primary school teachers in an inclusive context: *methodology and methods.* The study uses analysis, synthesis, generalization, and modeling, drawing on personality-oriented, activity-based, and systemic approaches. Reflective skills are conceptualized as an integrative professional-personal quality that enables the teacher to analyze and transform their own practice within the inclusive process. *Results.* A structural-functional model has been developed that integrates target, content (motivational-value, cognitive, and activity components), procedural (stages, methods, forms), and outcome-evaluative (criteria and levels) components. The study identified the pedagogical conditions for developing reflective skills. *Scientific novelty.* The model orients professional training toward reflective skills as a mechanism for the transition from emotionally reactive responding to well-grounded pedagogical decision-making, and from formal integration to genuine inclusion - *practical significance.* The model can be implemented in teacher education, including through an elective course that ensures prospective primary school teachers purposefully develop reflective skills.

Keywords: reflection, reflective skills, reflective skills of a future primary school teacher, model for the formation of a teacher's reflective skills.

Introduction. Inclusive education, a defining benchmark for reforming the national education system, establishes every child's right to equal access to education, regardless of special educational needs and individual capabilities (Resolution of the Government of the Republic of Kazakhstan No. 1143, 2024). Implementing this principle has changed the requirements for professional training: prospective primary school teachers must work not with a relatively homogeneous class, but with a heterogeneous community of learners who differ in their pace of mastering material and in their sensory, cognitive, and emotional characteristics.

In practice, however, the declared inclusion is often implemented as integration: a child with special educational needs is placed in a mainstream class, while the school and the

educational process are not restructured to meet the child's needs (Mamerkhanova, 2025). The formal presence of a young learner does not ensure their full participation and points to a gap between the normatively established principle of inclusion and actual pedagogical practice. Bridging this gap depends directly on the primary school teacher's ability to analyze their own practice and restructure it in response to the child's special educational needs, making the development of the prospective teacher's reflective skills a key condition for the transition from integration to genuine inclusion.

These skills are grounded in reflection-a meaningful, systematic analysis of one's own experience aimed at its transformation (Dewey, 1933; Schön, 1983). In contemporary pedagogy, it is understood not as spontaneous

contemplation but as a structured thought process spanning levels from the technical aspects of practice to the teacher's professional identity and value foundations (Korthagen, 2004). The reflective skills formed on this basis become a key professional competence of the prospective teacher. In an inclusive context, where universal ready-made solutions are absent, reflective skills enable the teacher to question their own assumptions, identify implicit stereotypes in perceiving students, and consciously restructure their practice to suit the individual child (Hatton & Smith, 1995; Rodgers, 2002). Researchers emphasize that, when working with learners with special educational needs, reflective skills serve not as a supplement but as a system-forming mechanism for professional growth, enabling a shift from emotionally reactive responding to well-grounded pedagogical decision-making (Korthagen & Vasalos, 2005; Machost & Stains, 2023).

The degree to which the problem has been studied is characterized by considerable scholarly attention to reflection. The theoretical and methodological foundations of reflective practice were laid in works that defined reflection as the basis of a teacher's professional thinking (Dewey, 1933; Schön, 1983) and were further developed in models of structured reflection, among which the ALACT cycle and the concept of "core reflection" have gained the widest recognition; the latter distinguishes successive phases of making sense of experience-action, looking back, awareness of essential aspects, creating alternative methods, and trial (Korthagen, 2004; Korthagen & Vasalos, 2005). A separate line of research is devoted to substantiating a reflective orientation as an alternative to the technocratic ("craft") model of teacher training, in which the prospective teacher is regarded not as a passive executor of ready-made prescriptions but as a subject capable of justifying their own professional decisions and critically examining their value foundations (Zeichner & Liston, 2014). Within this line of research, a substantial body of work has emerged on the development of prospective teachers' reflective skills at the stage of professional training, where reflection is interpreted as a means of bridging the gap between

theoretical knowledge and actual practice; at the same time, researchers note that reflective skills do not arise in students spontaneously and require purposeful, specially organized development (Hatton & Smith, 1995; Rodgers, 2002). In special and inclusive education, reflective skills are studied as a condition for high-quality practical preparation for working with learners with special educational needs and as a tool for professional growth in this field (Şerban & Hathazi, 2025).

In parallel, research on prospective teachers' readiness for inclusive education is actively developing. Empirical studies consistently show that the attitudes, self-efficacy, and practical experience of students in teacher education programs substantially determine their ability to implement inclusive practices (Boyle, Barrell, Allen, & She, 2023). Systematic reviews show that prospective teachers' self-efficacy regarding inclusion forms primarily through direct experience interacting with learners with special educational needs and through applying professional knowledge in practice. In contrast, theoretical instruction alone cannot develop it (Wray, Sharma, & Subban, 2022). In the context of the Republic of Kazakhstan and Central Asia, research reveals that prospective teachers are insufficiently prepared to work in an inclusive environment, and that teacher education institutions lack a coherent, consistently structured strategy for their preparation, as a result of which students' methodological readiness, skills, and value-motivational attitudes remain poorly developed (Makoelle & Burmistrova, 2021; Prisiazhniuk, Makoelle, & Zangieva, 2024).

An analysis of the literature reveals that reflective skills and readiness for inclusion are studied predominantly as separate, weakly connected subject areas: works on pedagogical reflection, as a rule, do not take into account the specific features of the inclusive environment, while studies of inclusive readiness rarely reveal the reflective component as a mechanism of its formation. This defines a contradiction between, on the one hand, the recognition of reflective skills as a necessary condition for the transition from formal integration to genuine inclusion

and, on the other hand, the absence of a coherent pedagogical model that ensures the purposeful development of these skills specifically in prospective primary school teachers, taking into account the specific features of inclusive education. This contradiction defines the research problem: what content, structure, and organizational-pedagogical support should a model have to effectively develop the reflective skills of prospective primary school teachers within the conditions of inclusive education?

The need to develop the model stems from the fact that the fragmentary inclusion of reflection in teacher training does not ensure the systematic development of reflective skills or link them to the specific professional tasks of the inclusive primary school. Accordingly, the research question is formulated as follows: what are the structure and content of a model for developing the reflective skills of prospective primary school teachers within the conditions of inclusive education that ensures the transition from the reproductive assimilation of pedagogical knowledge to conscious, reflectively regulated activity in an inclusive environment? The theoretical significance of the study lies in the fact that the proposed model conceptually unites two previously disparate areas—the theory of pedagogical reflection and research on readiness for inclusive education—and thereby substantiates reflection as a system-forming mechanism for bridging the gap between integration and inclusion, and operationalizes this mechanism in the form of interconnected structural components of prospective teacher training.

The purpose of the work is to develop and provide a theoretical rationale for a model for developing the reflective skills of prospective primary school teachers within the conditions of inclusive education. The article presents the theoretical rationale and describes the developed model, identifies its structural components, and discusses the results.

Materials and Methods. The study is conceptual (theoretical) in nature, and its design follows a model-building approach as one way to design conceptual work. Achieving the stated aim required applying a set of theoretical research methods to ensure the

scientific validity of the model's development. The analysis method was used to break down the complex phenomenon of reflective skill development into its constituent elements. In the study, analysis made it possible to identify the structural components of prospective teachers' reflective skills, differentiate approaches to organizing pedagogical reflection in domestic and international practice, and determine the specific features of the inclusive educational environment as the context in which these skills are formed and realized. The synthesis method ensured the integration of the elements identified during the analysis into a coherent system. The synthetic approach made it possible to integrate theoretical propositions on pedagogical reflection with research on professional readiness for inclusive education, to combine the psychological and pedagogical patterns of the development of reflective skills with the specific features of primary school teacher training, and to form a holistic understanding of the mechanisms for developing reflective skills within the conditions of inclusion.

The method of generalization was used to identify the essential features and patterns characteristic of the process of developing reflective skills. Generalizing the results from the scholarly and pedagogical literature made it possible to formulate the theoretical propositions that determine the content and structure of the model being developed and to identify the invariant characteristics of the successful organization of prospective teachers' reflective activity at the stage of professional training. The method of concretization ensured the transition from abstract theoretical propositions to their practical embodiment in the context of training a primary school teacher for an inclusive environment. This method made it possible to determine the specific forms, methods, and means of developing reflective skills, adapted to the specific features of inclusive primary education and the professional tasks prospective teachers encounter when working with learners with special educational needs.

Modeling served as the key research tool, enabling the design of the system's structure and content for developing the reflective

skills of prospective primary school teachers within the conditions of inclusive education. Modeling is the process of creating an idealized representation of a pedagogical system or process that captures its essential structural and functional characteristics, the interrelationships among its components, and the mechanisms for achieving planned results (Susanto, Rachmadtullah, & Rachbini, 2020). In this study, modeling made it possible to visualize the complex interrelationships among the target, conceptual-methodological, content, procedural, and outcome components, and to substantiate the logic of their interaction in the educational process. In pedagogical research, a model performs several functions: a representative function, reflecting a simplified yet adequate representation of complex pedagogical reality; an interpretive function, providing an understanding of the internal mechanisms and patterns of the process under study; a predictive function, making it possible to anticipate the results of implementing the designed system in educational practice; and an instrumental function, serving as the basis for developing specific methodological solutions.

Results. The developed model for the formation of reflective skills in prospective primary school teachers within the conditions of inclusive education constitutes a coherent system of five interconnected components—target, conceptual-methodological, content, procedural, and outcome—united by a single logic of transition from the reproductive assimilation of pedagogical knowledge to conscious, reflectively regulated professional activity (Figure 1).

The target component defines the model's strategic orientations and sets the direction of the entire holistic pedagogical process of the prospective teacher's professional training. It is determined by the social demand for a teacher capable not only of formally including a child with special educational needs in the classroom, but of ensuring the child's full participation, which presupposes a transition from *de facto* integration to genuine inclusion. In line with this demand, the aim is to develop in prospective primary school teachers reflective skills that ensure the conscious design, analysis, and

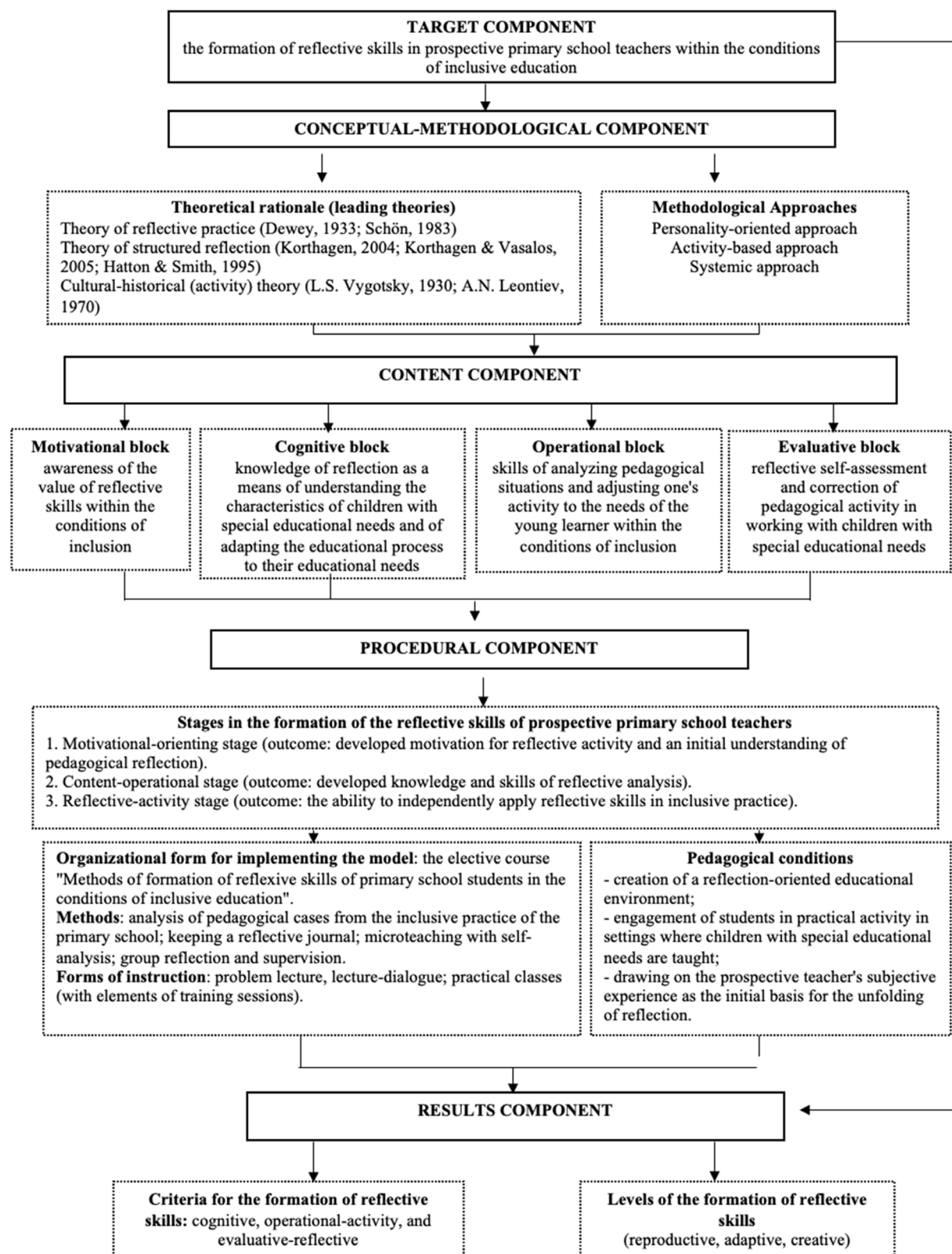
restructuring of their own pedagogical activity in the inclusive educational environment. The aim is specified through a system of objectives: to form stable motivation for the reflective analysis of professional activity within the conditions of inclusion; to ensure the mastery of a system of knowledge about pedagogical reflection, special educational needs, and ways of adapting the educational process; to develop the operational skills of observing, interpreting, and restructuring pedagogical actions in relation to the individual young learner; and to form the capacity for self-assessment and correction of one's own activity. The target component performs a system-forming function, determining the content, logic, and expected outcome of all the subsequent components of the model.

The conceptual-methodological component reveals the model's theoretical foundations and defines the methodological approaches for organizing the process of developing reflective skills. The component is structured in two layers: a layer of underlying theories that establish an understanding of the nature of reflection and the mechanisms of its formation, and a layer of methodological approaches that ensure these theories are realized in the model's design.

The first theoretical foundation of the model is the theory of reflective practice, developed in the works of J. Dewey and D. Schön, which defines reflection as a systematic, disciplined analysis of one's own experience that underlies the teacher's professional thinking and ensures the transformation of experience into meaningful professional action (Dewey, 1933; Schön, 1983). This theory substantiates the very object of formation—reflective skills—as the core of the teacher's professionalism. The second foundation is the theory of structured reflection, according to which reflection lends itself to operationalization and develops as a sequence of phases—from action and its analysis to awareness of essential aspects, the creation of alternatives, and trial—while its effectiveness is determined by the depth of making sense of experience, which differs across levels from descriptive to critical (Korthagen, 2004; Korthagen & Vasalos, 2005; Hatton & Smith,

Figure 1

Model for the Formation of Reflective Skills in Prospective Primary School Teachers within the Conditions of Inclusive Education



1995). This theory explains how reflective skills can be developed and assessed in terms of depth. The third foundation is the cultural-historical

(activity) theory, developed in the works of L. S. Vygotsky and A. N. Leontiev, according to which higher mental functions and professional

skills are formed not through the transmission of ready-made knowledge but in the process of the subject's active, mediated activity (Vygotsky, 1978; Leontiev, 1978; Cong-Lem, 2022). This suggests that reflective skills develop only when the student is engaged in real activity aimed at analyzing and transforming their own professional experience.

The model operationalizes these theoretical foundations through three complementary methodological approaches. The systemic approach ensures that reflective skills are viewed as a coherent structure of interconnected elements, and the model itself as a unified system with a coordinated aim, content, process, and outcome. The activity-based approach, drawing on cultural-historical theory, establishes the logic of developing reflective skills through the student's active engagement in analyzing and transforming the professional experience they carry out. The personality-oriented approach recognizes that reflection concerns not only the technical aspects of activity but also the prospective teacher's professional beliefs, values, and identity, and therefore relies on their subject position and individual developmental trajectory.

The content component defines the internal structure of the reflective skills being developed and the substance of the training process. Within the reflective skills of the prospective primary school teacher, four interconnected elements are distinguished. The motivational element reflects an awareness of the value of reflection, a sustained interest in analyzing one's own activity, and a need for professional self-improvement in the inclusive environment. The cognitive element encompasses knowledge of the essence and levels of pedagogical reflection, the psychological and pedagogical characteristics of children with special educational needs, and ways to adapt the educational process. The operational block includes the skills to observe one's own actions and learners' responses, interpret pedagogical situations, identify difficulties, and design and carry out activity restructuring in response to the needs of the individual child. The evaluative element reflects the capacity for adequate self-assessment of the results of professional activity,

awareness of one's own strengths and areas for development, and correction of pedagogical actions. The substantive content is aligned with the professional tasks that arise for the primary school teacher in the inclusive classroom and serves as the basis for designing the means of developing reflective skills.

The procedural component reveals the organizational and technological side of developing the reflective skills of prospective primary school teachers. It defines the logic of how the process under study unfolds over time: its stages, methods, forms, and the set of pedagogical conditions that ensure effectiveness. The process is designed as a stage-by-stage progression with a consistent increase in the student's subject position and independence-from activity externally regulated by the instructor to the independent, conscious application of reflective skills in professionally significant situations of the inclusive instruction of young learners.

The motivational-orienting stage aims to highlight the personal and professional significance of pedagogical reflection, build a positive disposition toward reflective activity, and develop an initial theoretical understanding of its essence, structure, and role in the primary school teacher's work within inclusive conditions. At this stage, the student realizes that the ability to analyze and correct one's own activity is a necessary condition for effective interaction with young learners with different educational capabilities and needs.

The content-operational stage focuses on building a system of knowledge about the techniques and procedures of reflective analysis and developing the corresponding skills: identifying the grounds for one's own pedagogical actions, relating intention and outcome, detecting difficulties and their causes, and designing ways to correct them. Mastering the operational composition of reflection is carried out using material that reflects the specific features of primary education and inclusive practice, ensuring the skills developed transfer to the real professional context.

The reflective-activity stage involves independently applying the developed reflective

skills in quasi-professional and practical situations in the inclusive instruction of young learners. At this stage, reflection takes on a regulatory function: the student conducts a self-analysis of their activity, evaluates the adequacy of the chosen strategies for adapting content and individualizing instruction for children with special educational needs, and, on this basis, corrects their professional actions.

The main organizational form for implementing the model is the elective course "Methods of formation of reflexive skills of primary school students in the conditions of inclusive education," which ensures the purposeful and systematic development of reflective skills; its trial implementation is envisaged as part of a subsequent formative experiment. The course content is structured according to the identified stages and integrates theoretical and practice-oriented training.

In the process of developing reflective skills, methods that activate the student's reflective activity are applied: the analysis of pedagogical situations and cases from the inclusive practice of the primary school; the keeping of a reflective journal that records the dynamics of professional self-reflection; the video analysis of lesson fragments; microteaching followed by individual self-analysis; and group reflection and supervision, which ensure that individual experience is related to external expert and collegial assessment.

The system of instructional organization forms is built with a predominance of practice-oriented and active forms-practical classes, training sessions, and the modeling of inclusive lesson fragments-which is conditioned by the requirements of the activity-based approach, according to which reflective skills are formed in the subject's own activity. The theoretical-orienting component, which ensures mastery of the initial understanding of the essence and structure of pedagogical reflection at the motivational-orienting stage, is implemented through interactive lecture forms (the problem lecture, the lecture-dialogue). The choice of interactive rather than traditionally monological lecture forms is determined by the personality-oriented approach, which presupposes the

student's subject position, the dialogic nature of instruction, and reliance on their subjective experience. The systemic approach ensures the subordination and coherent organization of these forms within a single process, along with their distribution across stages, with a regular transition from theory-orientings to practice-activity forms, and effectiveness of the model is ensured by a set of interrelated pedagogical conditions: the creation of a reflection-oriented educational environment that stimulates the making sense and self-assessment of professional activity; the engagement of students in practical activity in settings where children with special educational needs are taught; the systematic pedagogical support of reflective activity on the part of the instructor, ensuring a gradual reduction of external regulation; and the drawing on the prospective teacher's subjective experience as the initial basis for the unfolding of reflection.

The outcome component establishes the criteria-and-levels basis for assessing the formation of reflective skills that is built into the model. The criteria are aligned with the structure of reflective skills and include the motivational, cognitive, operational-activity, and evaluative-reflective criteria. Each criterion corresponds to a system of indicators: for the motivational criterion-an awareness of the value of reflection and the stability of interest in analyzing one's own activity; for the cognitive criterion-the completeness and systematic nature of knowledge about reflection, special educational needs, and ways of adapting instruction; for the operational-activity criterion-the formation of the skills of observing, interpreting, and restructuring pedagogical actions; and for the evaluative-reflective criterion-the adequacy of self-assessment and the capacity to correct one's activity. Based on how the indicators are expressed, the model differentiates three levels of reflective skill formation: reproductive, adaptive, and creative.

The reproductive level is characterized by unstable motivation for reflection and its perception as an external requirement; knowledge about reflection and special educational needs is fragmentary; the prospective teacher analyzes

their own activity superficially, primarily describing events without identifying their causes, and acts according to ready-made models, without restructuring their activity, based on analysis, to suit the needs of the individual child; self-assessment is inadequate or absent. This level corresponds to an orientation toward the formal inclusion of the child, that is, in effect, toward integration.

The adaptive level is characterized by a sustained interest in reflective analysis and an awareness of its professional value; knowledge about reflection and ways of adapting instruction is sufficiently complete and systematic; the prospective teacher not only describes but also interprets pedagogical situations, identifies difficulties, and, based on reflective analysis, consciously adapts their own activity to the needs of the child, drawing on the guidelines provided; self-assessment is generally adequate, though the ways of correction are not always determined independently.

The creative level is characterized by an internal need for reflection as a stable professional disposition; knowledge is complete, systematic, and consciously applied; the prospective teacher independently and critically analyzes their own activity, establishes cause-and-effect relationships, and, on this basis, designs and creatively restructures the educational process about the individual needs of learners, flexibly generating new solutions in situations of uncertainty; self-assessment is adequate and reflective, and the correction of activity is carried out independently. An indicator of this level is the capacity to ensure genuine inclusion.

The criteria-and-levels basis of the outcome component sets reference points for subsequent diagnostics. It makes it possible to track the dynamics of reflective skill development. In contrast, the feedback built into the model between the outcome component and the preceding components creates the conditions for adjusting the process.

Discussion. The results are consistent with contemporary research that recognizes reflection as a key factor in prospective teachers' professional development, while also refining and extending this research to the conditions of

inclusive education.

The developed model aligns with scholarly understanding that reflective skills constitute a component of primary school teachers' professional competence. Thus, Susanto, Rozali, and Agustina (2019), in constructing a model of the pedagogical competence of primary school teachers, included reflective ability among its basic constructs alongside pedagogical knowledge, emotional intelligence, and communication. Our model shares this understanding of the significance of reflection but differs in its subject, target audience, and context: whereas in the aforementioned work reflection acts as one of the elements of the broader competence of practicing teachers, in the proposed model reflective skills are an independent object of purposeful formation, the target audience is prospective teachers at the stage of university training, and the formation itself is oriented toward the specific tasks of the inclusive educational environment, which is not considered in that work.

The results also align with studies confirming the effectiveness of reflective practice in training prospective teachers. Honghuan Li (2025) showed that systematic reflective practice substantially contributes to the development of critical pedagogical skills and supports students' transition to the professional activity of a novice teacher. This conclusion reinforces the logic of the activity-based formation of reflective skills built into our model; at the same time, the aforementioned study is predominantly qualitative and narrative in nature and does not offer a coherent structural-component model, whereas in the present work reflective skills are formed within a systematically organized model with coordinated target, conceptual-methodological, content, procedural, and outcome components.

The level-based foundation of the proposed model draws on classical conceptions of the depth of reflection, according to which reflection develops from descriptive through dialogic to critical, and from a technical making sense of activity to a making sense of its value foundations (Hatton & Smith, 1995; Korthagen & Vasalos, 2005). The levels identified in the

model-reproductive, adaptive, and creative-correspond to this logic of the increasing depth of making sense of experience. The proposed model distinguishes itself by tying levels of reflection to the specific features of the inclusive environment and directly linking them to the prospective teacher's transition from an orientation toward the formal inclusion of the child to ensuring the child's full participation.

The results obtained supplement studies that establish a connection between reflective strategies and preparation for work with learners with special educational needs (Şerban & Hathazi, 2025), and they fit into the context of Kazakhstani studies that record a gap between declared inclusion and the actual practice of schools (Mamerkhanova et al., 2025). The proposed model thereby contributes to bridging the contradiction noted in the introduction, conceptually uniting the previously disparate areas-theory of pedagogical reflection and research on readiness for inclusive education-and substantiating reflection as a mechanism for the transition from integration to genuine inclusion.

Conclusion. The model for the formation of reflective skills in prospective primary school teachers within the conditions of inclusive education responds to the current requirements for the professional training of teachers, requirements driven by the gap between the normatively established principle of inclusion and the actual practice of primary schools, in which the instruction of children with special educational needs is often reduced to their formal inclusion without a restructuring of the educational process. Under these conditions, it is precisely reflective skills that act as the mechanism enabling the prospective teacher to move from an orientation toward the formal presence of the child to ensure the child's full participation, that is, from de facto integration to genuine inclusion.

In accordance with the stated aim, the model was not only developed but also theoretically substantiated: its underlying theories and methodological approaches were identified, the structure of the reflective skills to be formed was revealed, the stages, methods, and pedagogical conditions of their formation were designed, and the criteria-and-levels basis for assessing the outcome was established. The formulated research question concerning the structure and content of a model that ensures the transition from the reproductive assimilation of pedagogical knowledge to conscious, reflectively regulated activity in the inclusive environment was thereby resolved. The answer to it is a coherent model in which the target, conceptual-methodological, content, procedural, and outcome components are linked by a single logic, and in which reflection is substantiated as a system-forming mechanism that moves the training of the prospective teacher from the reproductive level to the creative level and ensures the transition from integration to genuine inclusion. The study thereby resolves the identified contradiction, conceptually uniting the previously disparate areas-the theory of pedagogical reflection and research on readiness for inclusive education.

Further research may be directed toward the empirical validation of the model in educational practice, including the development and implementation of the elective course as the main means of its realization, the conduct of a formative experiment, and the quantitative diagnosis of the dynamics of the formation of reflective skills according to the identified criteria and levels. It also appears promising to study the impact of the systematic formation of reflective skills not only on prospective teachers' readiness for inclusion but also on the development of the prospective teacher's related professional qualities-critical thinking, the capacity for self-analysis, and the adaptation of the educational process to the individual needs of learners.

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