



Mutual integration of prognostic and reflexive activity in future teachers

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Annotation. The article analyzes the problem of prognostic and reflexive processes manifesting in the professional activity of future teachers not as isolated phenomena but as interconnected elements of a unified functional system. It is substantiated that prognostic activity consists in foreseeing the future outcomes of the pedagogical process, while reflexive activity consists in analyzing and evaluating activity already carried out. The mechanisms of mutual integration of these two types of activity are revealed cyclicality, functional complementarity, a shared cognitive basis, and practical integration tools. The article also presents a system of pedagogical conditions and practical instruments that ensure integration (a reflexive-prognostic diary, case analysis, microteaching, portfolio). The conclusions of the study serve as a theoretical basis for developing practical recommendations aimed at developing the professional thinking of future teachers within higher pedagogical education.

Keywords: prognostic activity, reflexive activity, integration, pedagogical thinking, future teacher, professional training, pedagogical forecasting, professional reflection.

Взаимная интеграция прогностической и рефлексивной деятельности будущих учителей

Аннотация. В статье анализируется проблема проявления прогностических и рефлексивных процессов в профессиональной деятельности будущих учителей не как изолированных, а как взаимосвязанных элементов единой функциональной системы. Обосновано, что прогностическая деятельность заключается в предвидении будущих результатов педагогического процесса, а рефлексивная деятельность в анализе и оценке уже осуществлённой деятельности. Раскрыты механизмы взаимной интеграции данных видов деятельности цикличность, функциональная взаимодополняемость, общая когнитивная основа и практические средства интеграции. Представлена также система педагогических условий и практических инструментов, обеспечивающих интеграцию (рефлексивно-прогностический дневник, анализ кейсов, микропреподавание, портфолио). Выводы исследования служат теоретической основой для разработки практических рекомендаций, направленных на развитие профессионального мышления будущих учителей в процессе высшего педагогического образования.

Ключевые слова: прогностическая деятельность, рефлексивная деятельность, интеграция, педагогическое мышление, будущий учитель, профессиональная подготовка, педагогическое прогнозирование, профессиональная рефлексия.

Bo'lajak o'qituvchilarda prognostik va refleksiv faoliyatning o'zaro integratsiyasi

Annotatsiya. Ushbu maqolada bo'lajak o'qituvchilarning kasbiy faoliyatida prognostik va refleksiv jarayonlarning alohida-alohida emas, balki o'zaro chambarchas bog'liq, yaxlit funksional tizim sifatida namoyon bo'lish muammosi tahlil qilingan. Prognostik faoliyat pedagogik jarayonning kelgusi natijalarini oldindan ko'ra bilish, refleksiv faoliyat esa amalga oshirilgan faoliyatni tahlil qilish va baholashdan iborat ekanligi asoslangan. Maqolada ushbu ikki faoliyat turining o'zaro integratsiyalashuv mexanizmlari sikllilik, funksional to'ldiruvchanlik, umumiy kognitiv asos va amaliy integratsiya vositalari ochib berilgan. Shuningdek, integratsiyani ta'minlovchi pedagogik shart-sharoitlar va amaliy vositalar tizimi (refleksiv-prognostik kundalik, keys-tahlil, mikrota'lim, portfolio) taqdim etilgan. Tadqiqot xulosalari oliy pedagogika ta'limi jarayonida bo'lajak o'qituvchilarning kasbiy tafakkurini rivojlantirishga yo'naltirilgan amaliy tavsiyalar ishlab chiqish uchun nazariy asos bo'lib xizmat qiladi.

Kalit so'zlar: prognostik faoliyat, refleksiv faoliyat, integratsiya, pedagogik tafakkur, bo'lajak o'qituvchi, kasbiy tayyorgarlik, pedagogik bashorat, professional refleksiya.

INTRODUCTION

The modernization of the national education system places fundamentally new demands on the personality and professional thinking of the teacher. Normative and legal documents aimed at reforming continuous education in the Republic of Uzbekistan define the development of teachers' independent, creative, and analytical thinking as a priority task. A teacher operating under conditions of constant pedagogical uncertainty is required not merely to react to events as they occur, but to foresee the course of the pedagogical process in advance and, upon its completion, to critically reconsider the activity carried out.

In pedagogical theory and practice, prognostic and reflexive activity are most frequently examined as two separate, independent skills: the ability to plan and foresee, on the one hand, and the ability to analyze and evaluate one's own activity, on the other. However, an examination of real pedagogical activity shows that these two processes cannot exist apart from one another: a forecast without subsequent reflective verification remains an unconfirmed assumption, while reflection without a preceding forecast loses its orienting, forward-looking function. For this reason, it is not the isolated development of prognostic and reflexive skills as such, but the purposeful formation of their mutual integration, that emerges as an urgent pedagogical problem. A contradiction can be observed in the practice of higher pedagogical education between, on the one hand, the objective need for future teachers to possess an integrated form of professional thinking that combines forecasting and reflection, and, on the other hand, the fact that curricula and teaching methods largely continue to treat forecasting and reflection as separate topics, without revealing the mechanisms of their interconnection. This contradiction determines the relevance of the present study.

The purpose of the study is to reveal the essence and mechanisms of the mutual integration of prognostic and reflexive activity in future teachers, and to substantiate the pedagogical conditions and instruments that ensure this integration.

LITERATURE REVIEW AND METHODOLOGY

The problem of reflection has a long-standing tradition in philosophy and psychology. J.Dewey characterized reflective thinking as the process by which an individual consciously reconsiders their own experience in order to draw substantiated conclusions from it. D.Schön distinguished two forms of professional reflection “reflection-in-action”, carried out during the course of activity itself, and “reflection-on-action”, carried out after its completion. This distinction is of particular importance for the present study, since it shows that reflection is directly connected not only with the past but also with the ongoing and future course of activity. In research devoted to forecasting, L.Regush characterizes prognostic ability as a complex psychological phenomenon manifested in every form of human activity and expressed in the capacity to foresee the course of events and to make decisions under conditions of incomplete information. B.Lomov and Ye.Surkov examined anticipation – the capacity to foresee the results of an action before it is carried out as a universal mechanism underlying any purposeful activity, including pedagogical activity.

M.Kashapov studied pedagogical thinking as an integrative quality of the teacher's personality that unites analytical, prognostic, and reflexive components into a single system. B.Vulfov and V.Kharkin showed that pedagogical reflection performs not only an evaluative but also a regulative function: through reflection the teacher not only assesses what has already occurred but also adjusts the direction of subsequent activity, that is, forms a new forecast. F.Korthagen proposed a cyclical model connecting theory and practice in teacher education, within which experience, reflection on that experience, and the design of new action follow one another continuously – a model methodologically close to the idea of prognostic-reflexive integration advanced in this article.

Among Uzbek scholars, Sh.Sharipov examined the formation of future teachers' readiness for professional-pedagogical activity, emphasizing analytical and forecasting skills as a component of that readiness. At the same time, an examination of the literature available on the subject shows that the majority of studies consider prognostic and reflexive activity as parallel, coexisting phenomena rather than as an organically interconnected, mutually generating whole. It is this circumstance that determines the need for a special study of their mutual integration. Proceeding from the above, the mutual integration of prognostic and reflexive activity is understood in this study as a stable functional connection between a future teacher's capacity to foresee the course and outcomes of the pedagogical process and their capacity to analyze and critically reconsider activity already carried out, within which forecasting relies on the results of reflection on prior experience, and reflection, in turn, generates the basis for a new, more substantiated forecast.

The following research methods were used in the course of the study: theoretical analysis, systematization, and generalization of pedagogical and psychological literature on the topic; study of regulatory and legal documents; pedagogical observation of students' activity during the pedagogical practicum; conversations and open-ended surveys conducted among students and experienced teachers; and content analysis of students' reflexive diaries, lesson plans, and portfolio materials. Since the purpose of the study is to reveal the qualitative essence and mechanisms of an integrative pedagogical phenomenon rather than to measure it quantitatively, the study is descriptive-analytical in character and does not rely on statistical data processing.

RESULTS AND DISCUSSION

The analysis carried out makes it possible to distinguish four interconnected mechanisms through which prognostic and reflexive activity are mutually integrated in the professional activity of a future teacher.

Pedagogical activity unfolds as a continuous cycle: forecast – action – reflection – new forecast. Before a lesson, the teacher forecasts its course and probable outcomes; in the course of the lesson, elements of "in-action" reflection allow the forecast to be corrected in

real time; after the lesson, retrospective reflection compares the results achieved with the forecast made, and on this basis a new, more precise forecast is constructed for subsequent activity. Within this cycle, prognosis and reflection are not two separate acts but two phases of a single movement of professional thought. Prognosis and reflection perform complementary rather than identical functions: prognosis is oriented toward the future and performs an anticipatory, guiding function, while reflection is oriented toward the past and performs an evaluative, corrective function.

Both forecasting and reflection rely on the same cognitive operations – analysis of a pedagogical situation, comparison of alternatives, and causal reasoning. Consequently, the development of analytical thinking as such simultaneously strengthens both the prognostic and the reflexive components, which is what makes their purposeful integration in the educational process both possible and pedagogically effective.

The formation of integration is ensured most effectively not by studying forecasting and reflection as separate theoretical topics, but through practical instruments that combine both actions organically within a single task. The following proved most effective in the course of the study:

- a reflexive-prognostic diary, in which the student, prior to conducting a lesson, records a forecast of its expected course, and after the lesson records a reflexive analysis directly juxtaposed with the initial forecast;
- analysis of pedagogical situations (case studies), in which students are asked first to forecast possible ways of resolving a situation and then, after examining how it was actually resolved, to reflect on the accuracy of their own forecast;
- microteaching accompanied by video recording, which allows a forecast made before a fragment of a lesson to be directly compared with what is later observed on the recording;
- the “If I were in this situation...” technique, combining a forecasting task with a subsequent reflexive discussion of the forecast made;
- portfolio technology, which makes it possible to track, across a series of lessons, the dynamics of the connection between a student's forecasts and the subsequent reflexive conclusions drawn from them.

Observations of students' activity during the pedagogical practicum showed that when forecasting and reflection were organized as a single, interconnected task rather than as separate exercises, students' reflexive conclusions became noticeably more concrete and were more consistently transformed into guidelines for subsequent activity, whereas reflection carried out independently of any prior forecast more often remained a general, descriptive assessment of the lesson without a clear orientation toward future action. This qualitative observation confirms that it is specifically the interconnection between the two processes, and not their separate development, that gives rise to a mature form of professional pedagogical thinking. The following pedagogical conditions were found to be of particular importance for the mutual integration of prognostic and reflexive activity: organizing pedagogical practicum tasks so that a forecast and its subsequent reflexive verification form a single logical unit; consistently comparing a forecast made in advance with the results actually achieved; cultivating in students the ability to treat discrepancies between a forecast and the actual outcome not as a mistake to be feared but as material for professional growth; conducting teacher-student interaction on the basis of dialogic, non-directive discussion of forecasts and reflexive conclusions; and using digital tools video recordings, electronic diaries, online discussion platforms that make it easier to compare a forecast with its actual realization.

CONCLUSION

The results of the study confirm that the professional thinking of a future teacher acquires a mature, integrated character not through the separate development of prognostic and reflexive skills, but through the purposeful formation of their mutual integration. This

integration has been shown to rest on four interconnected mechanisms cyclical-functional, functional-complementary, cognitive-basis, and practical-instrumental which together transform forecasting and reflection from two isolated actions into a single, continuously renewing cycle of professional thought. The practical instruments identified in the course of the study the reflexive-prognostic diary, case analysis, microteaching, the “If I were in this situation...” technique, and portfolio technology – demonstrated their capacity to combine forecasting and reflection organically within a single pedagogical task and can be recommended for use in the courses “Pedagogy” and “Pedagogical Skill” taught in higher pedagogical education institutions.

A promising direction for future research is the study of the mutual integration of prognostic and reflexive activity within a digital educational environment, in particular through the use of adaptive learning platforms and artificial-intelligence-based tools capable of automatically juxtaposing a student's forecasts with the actual course and outcomes of their pedagogical activity.

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