

VI International Forum on Teacher Education

Posterior Models of Learning Activity in Higher Educational Institution as a Condition for Future Teacher's Training Improvement

Irina V. Rudenko * (a), Inna V. Gruzdova (b),
Tatyana V. Emelyanova (c), Alla A. Oshkina (d)

(a), (b), (c), (d) *Togliatty State University, 445044, Togliatty (Russia), 14 Belorusskaya str.,
ivrudenko@rambler.ru*

Abstract

Improvement of the educational process at the university through implementation of a domestic and national order for training a professional person, combining theoretical knowledge with practical experience, is the most important task of higher education. The purpose of the article is to substantiate and expand capabilities of the posterior component in training of teaching staff. In this context, the article discloses the concept of "posterior model". Domestic and foreign studies (D. Boud and J. Pascoe, D. A Kolb, RW Jone, ES Henderson, etc.) on the introduction of a posterior models in the process of training future teachers, which can bring vocational training in line with new social realities, international standards, make a student a real subject of his education are systemized. The leading ideas and theoretical approaches to designing such models at a university are explained in the article. The principal method of obtaining empirical data was the questionnaire method, conducted among 200 students of Togliatti State University. It allowed us to identify the "difficulties" that motivate future teachers to make their own "discoveries" and compensate for the missing knowledge in the process of attracting additional information. The result of the study and the subject of discussion is substantiation of the ways of students' individual creative experience. In conclusion, it is stated that the posterior model allows us to correlate the level of students' professional competence, set by the professional standard, with the needs of the subjects of the educational process. This article is aimed at teachers, researchers, heads of educational institutions involved in improving of teacher education.

Keywords: professional training, teacher education, practice-oriented training, posterior model, individual creative experience.

© 2020 Irina V. Rudenko, Inna V. Gruzdova, Tatyana V. Emelyanova, Alla A. Oshkina.

This is an open access article distributed under the terms of the Creative Commons Attribution License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Published by Kazan federal university and peer-reviewed under responsibility of IFTE-2020 (VI International Forum on Teacher Education)

* Corresponding author. E-mail: ivrudenko@rambler.ru

Introduction

Background

The relevance of the study is based on ongoing work of the scientific community in the search for promising models for improving teacher education, implementation of the domestic and national order for training a professional person, combining modern theoretical professional training with practical experience (Alieva & Rudenko, 2017). According to implementation of a competency-based approach in education, works of domestic (Asmolova, 2011; Bondarevskaya, 2000; Verbitsky & Larionov, 2009) and foreign authors (Blumenfeld et al. 1991; Hugerat, 2016) were relevant. They made it possible to suggest the hypothesis about use of posterior models in designing students' professional training (from the word a posteriori – Latin, “from the following”, “knowledge gained from experience”).

Status of a problem

The task of designing and implementing posterior models is a new one by itself for Russian pedagogy.

The appeal to these types of models is associated with implementation of a practice-oriented approach, which sets the practical result as one of the main goals in learning. It is effective in the formation of competencies. These days scientists disagree on interpretation of some aspects of the concept of "practice-oriented learning." Based on the Polisadov's definition (2014), it is possible to interpret this concept as “the process of students' mastering the educational program with the aim of forming students' professional competence by fulfilling real practical tasks”. The researcher sees the main goal of this learning as formation of practical skills among students. However, more attention is focused on formation of practical experience among students on the basis of newly acquired knowledge. It becomes the motivational basis for further professional development of students and contributes to formation of new qualities of professional consciousness (Polisadov, 2014).

Another approach (Andreev, 2005; Gruzdova, 2018; Mamatov et al., 2016) considers the essence of practice-oriented education at the university as a special strategy of creating students' conscious motivation to achieve professional competence, which requires thoughtful organization and creation of special conditions to achieve optimal result in the learning process. The idea of designing posterior models of student learning appears and becomes in demand within the framework of this approach. The unity of theoretical training is established with the students' existing (or lacking) life and professional experience in

professional activities. From a professional point of view, the lack of knowledge, application of which is claimed by practical activity, gives rise to a creative search among students and contributes to emotional and cognitive saturation. In this regard, the need to develop special professionally-oriented technologies that would allow students to influence the personal students' self-development and motivate them to creatively search for missing knowledge, is recognized.

The psychological substantiation for effectiveness of posterior models' implementation is research by (Rubinstein, 2003; Piaget, 1994; Vygotsky, 1982), their ideas about the active participation of psyche and human thinking in the learning process. Rubinstein (2003) noted that the starting point of the discovery of being was human practice, and thinking was derivative. The internal experience is a conductor of empirical experience (awareness through introspection, reflection, and later internalization). Initially, the experience is a lot of disordered, fragmented, unconscious impressions. However, the experimental data are ordered and systematized in the course of organized and structured observation and experiments. According to J. Piaget, "a person is an "active scientist" who begins to develop increasingly complex mental strategies interacting with the physical environment. The psychologist substantiated the idea of the active participation of the psyche and human thinking in the learning process. Vygotskiy (1982) determines the levels of cognitive development and considers the social situation as a source of human development. Thus, thinking about experience as a source of knowledge does not mean reducing knowledge only to experience. Scientific knowledge is the unity of experience and thinking, observations, common factors and facts. However, the question of their relationship and how knowledge is built on the basis of experience has different solutions.

Purpose and objectives of the study

The ideas obtained in the course of the research show that students are more motivated and "involved" in their future profession using this approach to learning. The subjectified need is the incentive, motivator and mainspring for training and activities. It becomes very useful to comprehend this experience in preparation of teaching staff in the context of implementation of a competency-based approach, which involves the use of various learning strategies that activate students' productive independent activities. Thus, the research problem can be defined. That is the theoretical and methodological foundations of designing and the conditions for the implementation of posterior models of educational activities of the university, which will serve as a guarantee of qualitative changes in the professional training of students in pedagogical areas.

The purpose of the study is theoretical substantiation and development of designing logic and implementing posterior models in the educational activities of the professional training of future teachers.

Literature review

Boud and Pascoe (1978) relied on factors that, in their opinion, were fundamental to empirical learning, trying to develop a learning model based on experience in the 70-s. of the last century. That is, the learning environment matching to the real conditions and active participation of students themselves. Researchers expressed confidence that even one of these factors would be sufficient to name an academic program based on the experience (Boud & Pascoe, 1978).

The distinctive feature of another model of learning based on experience (empirical learning; experience based learning systems (EBLS) is that the central place in all aspects of educational activity is given to the student's real experience. They are past events in his life, events of the current moment (for example, experience of participating in events), etc. According to the model's author, David Kolb, learning is the process in which knowledge is created through the transformation of experience (Kolb, 1984). According to this model, a key element of experience-based learning is that students analyze their own experience gained in learning activities or practice, reflect, evaluate and reconstruct it (individually or collectively) in order to extract the meaning from it for further actions. Thus, the experience is both the basis and motivation for learning (Boggs et al., 2007).

The main criterion for learning based on experience is, first of all, that the ultimate goal of the activity is to assign students to what is personally meaningful to them.

The Work-Based Learning Model practiced in Finland implies effective integration of the curriculum and work practice in order to use work experience as a source of training. Experience is a student's "living textbook" and an important andragogical principle (Valli et al., 2017). Work-based learning is motivation for students to move from educational institutions to working life. It is a means of maintaining motivation for learning and individualizing of educational content and developing students' skills and abilities. The student's life experience and professional experience are important starting points in planning university education for future professionals.

The Problem-Based Learning Model (PBL) was introduced to European education sector in the 1960s by medical education specialist Howard Barrows. He insisted on the fact that teaching medicine at McMaster University (Ontario, Canada) should be organized in such a way as to reproduce practical experience of professional activities (Hmelo-Silver & Barrows, 2006). Learning takes place in the process of understanding the problem and working on its solution. In other words, students receive a specific, professionally significant problem instead of receiving teaching information first. It stimulates further learning, allows students to individualize their learning, motivating them to study topics and concepts in which they have lack of knowledge (Biswas et al., 1970).

The model of education based on project activities is unity of three components. Firstly, it is a set of tools, ways and methods used to perform a specific task, as well as relevant knowledge, skills and abilities of an individual to apply them. Secondly, it is social space in which the project is implemented as the unity of practical, social, professional and personal tasks. Thirdly, it is a student involved in the activity, acquiring his social, professional, subjective identity in this space (McIntyre, 2005; Blumenfeld et al., 1991; Henderson, 1975). It makes students start thinking and acting taking into consideration their careers from the very first year of study (Agrati & Gemma, 2015; Altet, 2019).

Methodology

We mention scientific approaches that have become the methodological basis for solving research problems. They are systemic approach, allowing us to highlight structural components of the model and determine the nature of the relationship between them. Phenomenological approach required a comprehensive description of the studied posterior models. Axiological approach focused on the value content of the posterior model in and its role in professional training. Praxeological approach allowed us to consider posterior models as a condition of professional activity, which has its own laws, norms, rules, functions. Activity approach allowed us to give priority to those types of activities that contribute to the individual and personal development of the student.

Experiment description and procedure

Research objectives

We have identified the following research objectives. They are firstly, to study the features and substantiate possibility of introducing posterior models into practice of professional training of students in pedagogical areas at the university. Secondly, to identify the algorithm for organizing the educational process based on the individual experience of students' creative activities. Thirdly, to develop methods of scientific and methodological support of this process.

Theoretical and empirical methods

Theoretical analysis of philosophical, psychological, sociological, pedagogical literature on the problem, structurally substantive modeling, analysis and generalization of modern constructive experience in the field under study, content analysis and narrative method were used in the process of the research.

The basis of the research

The research was conducted in the period of 2019-2020. Empirical data were obtained on the basis of study of materials from the practice of students in the field of study “Psychological and Pedagogical Education” (200 people) at Togliatti State University.

The Stages of the research

The study was carried out in three stages.

The analysis of domestic literature and the experience of organizing practice-oriented training of students, who are going to be teachers at the university, and foreign researches on practice of organizing learning based on the individual creative experience of students, were carried out at the first stage.

We studied the data of the students' work experience internship, the difficulties that students overcame in individual creative activity. We analyzed methods of obtaining "missing" knowledge at the second stage.

Generalization and systematization of the research results was carried out. Conclusions about the possibility of using posterior models in the professional training of teachers in a university were drawn at the third stage.

Proceedings and description of the experiment

The research team identified the following assumption as a leading idea. The innovative orientation of development of the pedagogical process is associated with the strengthening of its posterior component. An internal contradiction that determines improvement of professional training is discrepancy between the real possibilities of the subject to the requirements that are made to them by society and the future profession. Situations of “difficulties” faced by students in individual professional activities motivate them to make their own “discoveries” and compensate for the lack of knowledge in the process of attracting additional information. Orientation of tasks to the “zone of proximal development” in the field of professional training of teaching staff is one of the most important conditions for development of personality and emergence of high-quality tumors in the need-motivational and cognitive spheres.

Results

The results of practical training of 200 students of Togliatti State University were analyzed at the stage of systematizing empirical data. It made possible to identify groups of problems and difficulties of 3-4 year students in the field of study bachelors of psychological and pedagogical education. “Difficulties” is a

substantive circle of cognitive (in the field of professional knowledge and perceptions), organizational, activity, and personality problems. Students did not find a constructive way to solve the problem situations while facing them (Figure 1). In this case, it was necessary to organize additional practical experience, which was the basis for development of applied posterior models.

The group of difficulties often experienced by trainees is associated with the experience of transferring theoretical knowledge into the space of professional activity of a future teacher. Difficulties arise due to the low level of students' possession of constructive and motivation skills for learning activities of primary school students.

Organizational and activity difficulties were noted among 49% of students. Inability to be interesting, logical, without violating the requirements of the classical teaching methodology, to build a lesson in elementary school, to pick up game developmental tasks on the topic of the lesson, rationally distribute time to solve the tasks, broadcast modern innovative educational technologies in the lesson are the problems that students call. The difficulties with organization of academic discipline in the lesson, attracting the attention of students to the material that should be learned in the lesson and the difficulties of evaluating the results of students in the lesson are noted in this context.

Students experience difficulty in ensuring activity of subjects of the pedagogical process, cooperation with children and adults, supporting activity, initiative and independence of children and interactions with parents (27%).

The next group of difficulties revealed the fact that the skills of mastering modern digital technologies are not formed. They lack in finding the necessary educational websites. Thus, difficulties in search and selection of demonstration materials, organization of an educational event or the organization of remedial work arise.

The third group of difficulties, which indicates a circle of problems in experience of pedagogical activity of student interns, is associated with a lack of practical skills for conducting pedagogical diagnostics (30%), qualitative interpretation and ranking of diagnostic research data.

The analysis of the problems and the causes of their occurrence in experience of professional pedagogical activity of students aim at university teachers to “pump” the missing skills in a specially organized “resonant” learning environment.

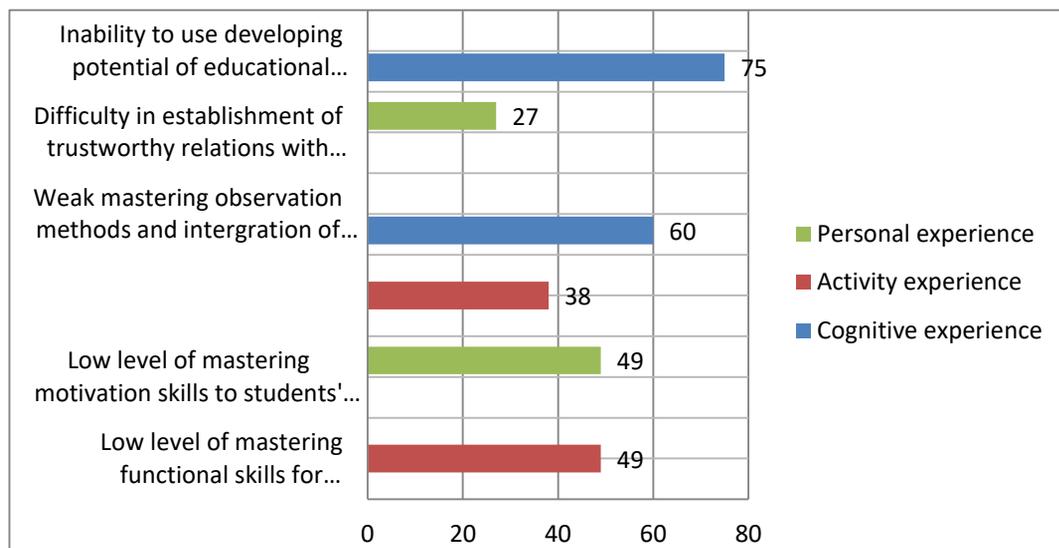


Figure 1 - Difficulties arising in the experience of professional activities of students in work experience internship (in percent)

Thus, the questionnaire made it possible to reflect the causes of the difficulties encountered by students in the course of practice. They are cognitively organizational, active and personal in nature. Difficulties in organization of upbringing and education of children, lack of knowledge of skills in modern digital technologies characterize the range of problems that arise in organizational and activity experience of students. Difficulties in using the developing potential of the educational organization and difficulties in summarizing the results of empirical studies relate to difficulties characterizing cognitive experience of students. Difficulty in establishing business contacts with pupils and parents, low level of development of the ability to motivate students to learn and study characterize a group of problems that arise in the structure of personal experience of future bachelors of psychological and pedagogical education.

The analysis of the problems and the causes of their occurrence in the experience of professional pedagogical activity of students aim at university teachers to “pump” the missing skills in a specially organized “resonant” learning environment.

Discussions

The main reason for the identified difficulties is in the students' mastery of generalized knowledge structured by others (scientists, teachers, psychologists, and teachers) from several sources and presented for mastering in a finished form. However, the peculiarity of the pedagogical profession is that some of

the components of the pedagogical experience cannot be mastered on the basis of existing knowledge that tends to become obsolete. Rapid changes in social environment (of all subjects in education system) require the future teacher to be creatively involved in overcoming difficulties and obtaining missing knowledge. In our opinion, the question of the algorithm for solving the identified problems through personal study and assignment of pedagogical experience can be implemented using the conclusions of studies on an empirical model of the learning process (Kolb, 1984). Gaining their own individual pedagogical experience begins with the stage of immersion in a practical situation of a problematic nature, in which a person experiences lack and need for knowledge to solve the problem. There is a direct familiarization with the experience at this stage. The analysis of available resources, methods of obtaining insufficient information is carried out then. Understanding and completion of personal experience to the state of a new model of their experience occur on this basis. The student formulates assumptions about new methods of pedagogical actions and forms a theoretical model of his pedagogical experience. Internalization of the acquired knowledge, its integration into individual experience and practical designing of the application of the received “new” methods of action in their own pedagogical activity takes place on the next stage. Thus, the posterior model of learning becomes popular in the process of professional training at the university. An important role in this process is given to the teacher, mentor, whose role is more reduced to support of the student, which can be carried out both directly and indirectly, through the electronic information and educational environment.

Conclusion

The posterior component of the organization of the pedagogical process actualizes the productive independent educational activity of students and helps to increase the cognitive activity of students. It enriches individual creative activity on “discovery” of missing knowledge by future teachers. It uses various self-learning strategies to overcome difficulties in professional practice, develops cooperation and co-creativity of teachers, tutors and students. On the one hand, the main conclusion of the research is confirmation of assumption that the design, scientific and methodological support of the posterior model will allow us to correlate the level of professional competence of students set by the professional standard with the needs of the subjects of the educational process. On the other hand, it will contribute to improvement of professional training.

Acknowledgements

The reported study was funded by RFBR, project number № 20-013-00126 A.

References

- Agrati, L., & Gemma, C. (2015). How can I do? The Representations of Secondary School Student-teachers about School Practices. *Procedia - Social and Behavioral Sciences*, 174, 503-509. DOI: 10.1016/j.sbspro.2015.01.695.
- Alieva, L. V., & Rudenko, I. V. (2017). Modeling is a promising method of organizing educational activities of higher school for the implementation of the competence approach. *Azimuth of Scientific Research: Pedagogy and Psychology*, 6(19), 132-135.
- Altet, M. (2019). La formation professionnelle des enseignants. DOI: 10.13140/RG.2.2.29116.59526.
- Andreev, A. L. (2005). Competence paradigm in education: experience of philosophical and methodological analysis. *Pedagogy*, 4, 19-27.
- Asmolova, A. G. (2011). *The development of universal learning competencies at school: from actions to thoughts*. Moscow: Prosveshchenie.
- Blumenfeld, P. C., Soloway, E., Marx, R. W., Krajcik, J. S., Guzdial, M., & Palincsar, A. (1991). Motivating Project-Based Learning: Sustaining the Doing, Supporting the Learning. *Educational Psychologist*, 26(3-4), 369-398. <https://doi.org/10.1080/00461520.1991.9653139>
- Boggs, J., Mickel, A., & Holtom, B. (2007). Experiential Learning Through Interactive Drama: An Alternative To Student Role Plays. *Journal of Management Education*, 31, 832-858. DOI: 10.1177/1052562906294952.
- Bondarevskaya, E. V. (2000). *Theory and practice of personality-oriented education*. Rostov-on-Don: publishing house of Rostov pedagogical university.
- Boud, D., & Pascoe, J. (1978). *Experiential learning: Developments in Australian post-secondary education*. Sydney: Australian Consortium on Experiential Education.
- Gruzdova, I. V. (2018). Inclusion in culture as a target for modern education. Culture and education: targets. *Humanitarian sheets of the TSPU. L. N. Tolstoy*, 1(25), 76-84.
- Henderson, E. S. (1975). The extent of Teachers' Involvement in In-service Training. *British Journal of In-Service Education*, 2(1), 29-54. DOI:10.1080/0305763750020108.

- Hmelo-Silver, C. E., & Barrows, H. S. (2006). Goals and Strategies of a Problem-based Learning Facilitator. *Interdisciplinary Journal of Problem-Based Learning*, 1(1). <https://doi.org/10.7771/1541-5015.1004>
- Hugerat, M. (2016). How teaching science using project-based learning strategies affects the classroom learning environment. *Learning Environments Research*, 19(3), 383-395.
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development* (Vol. 1). Englewood Cliffs, NJ: Prentice-Hall.
- Mamatov, A. V., Nemtsev, A. N., Melnik, J. M., Zhidkikh, O. Yu., & Bondareva, M. A. (2016). Competence Approach and Practice-Based Learning. *Higher Education in Russia*, 2(198), 115-120.
- McIntyre, D. (2005). Bridging the gap between research and practice. *Cambridge Journal of Education*, 35(3), 357–382.
- Piaget, J. (1994). *Selected Psychological Works*. Moscow: Pedagogika Press.
- Polisadov, S. S. (2014). Practice-Based Learning in higher educational. *Proceedings of Tomsk Polytechnic University*, 2, 23.
- Rubinstein, S. L. (2003). *Being and consciousness. Man and the world*. Saint Petersburg: Piter.
- Tharpe, A. M., Rassi, J. A., & Biswas, G. (1995). Problem-based learning: An innovative approach to audiology education. *American Journal of Audiology*, 4(1), 19-25.
- Valli, R., Valli, P., & Lähdesmäki, S. (2017). Meaningful learning experiences in the Finnish teacher education. *Asian Journal of Education and e-Learning*, 5. DOI:10.24203/ajeel.v5i2.4471
- Verbitsky, A. A., & Larionov, O. G. (2009). *Personal and competence approaches in education: problems of integration*. M.: Logos Publ.
- Vygotsky, L. S. (1982). *Collected works: in 6 volumes* (Vol. 1). Moscow: Pedagogika.