

Zhukova Natalya M.

Candidate of Pedagogical Sciences, Professor, Department of Pedagogy and Psychology of Professional Education, Russian Timiryazev State Agrarian University, Moscow (RF).

E-mail: nmzhukova@yandex.ru

Kubrushko Petr F.

Doctor of Pedagogical Sciences, Professor, Corresponding Member of Russian Academy of Education, Head of the Department of Pedagogy and Psychology of Professional Education, Russian Timiryazev State Agrarian University, Moscow (RF).

E-mail: pkubrushko@mail.ru

Shingareva Marina V.

Candidate of Pedagogical Sciences, Associate Professor, Department of Pedagogy and Psychology of Professional Education, Russian Timiryazev State Agrarian University, Moscow (RF).

E-mail: mar-lex@mail.ru

MECHANISM FOR DESIGNING COMPETENCE-ORIENTED TASKS IN VARIOUS ACADEMIC SUBJECTS AND REQUIREMENTS FOR ITS IMPLEMENTATION IN HIGHER EDUCATIONAL ESTABLISHMENTS

Abstract. *The research objective is to develop a mechanism for designing competence-oriented tasks in various academic subjects and requirements for its implementation in higher educational establishments.*

Methods. *The authors conducted a theoretical analysis of philosophical, psychological and pedagogical literature sources on the research issues to implement the objectives of the study; Russian and foreign educational experience on the use of study tasks in the study process is studied and summarized; educational and syllabus documentation and training materials are analyzed (syllabi, textbooks, manuals, task and exercise books, etc.); normative documents are studied (State Educational Standards, Federal State Educational Standards, Main Syllabi, curricula, instructional acts, etc.). Empirical research methods involve observation, testing, questioning, modeling, peer review, pedagogical experiment and statistical interpretation of the study results. The study was carried out from 2007 to 2012 in the Engineering-Pedagogical Faculty of Moscow State Agro-engineering Goryachkin University. 240 students were engaged in the pedagogical experiment. The following Moscow colleges provided facilities for the peer review of the list and solution frequency of vocational education tasks by secondary vocational school teachers: Colleges of Civil Engineering № 1 and № 12, Small Business College № 48, Polytechnic College № 13, Printing and Publishing College № 56, and Electromechanical College № 55.*

Results. *The research findings demonstrate that the competence-oriented tasks are shown as an integrative didactic unit of professional competence development. Its functions, classification, and structural components are given. The mechanism of designing competence-oriented tasks in various academic subjects is developed and tested. The proposed mechanism is an invariant for academic and teaching staff of educational establishments at all levels of professional education, including both higher and secondary specialized educational establishments. Currently, the mechanism is implemented in academic and teaching staff's methodical and teaching activities in RSAU-MAA named after K. A. Timiryazev, and the system of training and criterion competence-oriented tasks is included in*

educational and methodical packages for different subjects and applied in the University study process.

Scientific novelty. The authors have systemized and extended general theoretical didactical views on the need for competence-oriented tasks as the educational ones (as a component of the teaching content and technology) and the criterion ones (as a method and means of monitoring the process and the result of developing students' professional competence in the process of studying of different subjects); have specified the structure of the competence-oriented tasks (the structure elements: a condition, a requirement, and a construct) and determined the functions of the competence-oriented tasks in the modern university study process (gnostic, subject-and-activity, educational, axiological, creative, managing, motivation and incentive, control and assessment). The grounds for the classification of the competence-oriented tasks are considered: its position in the hierarchy of the formed competencies, professional activities stated in the State Educational Standard, types of the formed skills, the content of tasks and its intended purposes, the mode of learning and cognitive activity of students, the study forms implying the use of the tasks, and the number of students involved in the problem solving. The criteria for constructing a system of competence-oriented tasks (completeness, reliability and validity) and indicators (the system completeness coefficient, the didactic capacity coefficient, the overload factor of students, the degree of mastering the activities) are identified. The model of competence-oriented tasks, including regulatory, informative, technological, diagnostic, organizational and administrative units in their integrity and unity ensuring the effectiveness of the development of students' professional competencies is worked out. The authors show the mechanism of designing a system of competence-oriented tasks in a subject matter, including the following stages: analytical and constructive, verification and implementation, control and correction.

Practical significance. Much attention is given to the implementation of the model of a system of competence-oriented tasks in the study process in the Engineering-Pedagogical Faculty of Goryachkin University (MSAU) contributed to improve the quality of training students in General and Professional Pedagogy, the development of their subject, subject-cycle (the psychological-pedagogical cycle), as well as a certain set of general cultural and professional competencies. The proposed mechanism of designing competence-oriented tasks is invariant and can be used to elaborate a system of competence-oriented tasks in other academic subjects taught in higher educational establishments.

The obtained research results contribute to the implementation of the competence-based approach in the study process of modern higher educational establishments and can be used in further training of university academic and teaching staff.

Keywords: designing, competences, competence-oriented tasks, training and criteria competence-oriented tasks, mechanism of designing competence-oriented tasks, stages of designing a system of competence-oriented tasks, diagnostics of achieving a certain level of competence development in educational institution graduates.

References

1. Ball G. A. Teoriya uchebnykh zadach. Psikhologo-pedagogicheskiy aspekt. [The theory of educational problems. Psychologic-pedagogical aspect]. Moscow: Publishing House «Pedagogika», 1980. 184 p. (In Russian)
2. Bogdanov A. A. Vseobshchaya organizatsionnaya nauka (tektologiya). [General organizational science (tectology)]. Moscow: Publishing House «Kniga», 1989. 56 p. (In Russian)
3. Bukharova G. D. Teoretiko-metodologicheskie osnovy obucheniya resheniyu zadach studentov vuza. [Theoretical-methodological bases of training to the

decision of problems of high school students]. Ekaterinburg, 1995. 136 p. (In Russian)

4. Byk F. L. Ponyatiynye aspekty novoy paradigmy upravleniya. [Conceptual aspects of a new paradigm of management]. *Menedzhment v Rossii i za rubezhom. [Management in Russia and Abroad]*. 2007. № 5. P. 3–8. (In Russian)

5. Zhukova N. M. Predmetnye kompetentsii: problemy proektirovaniya. [Subject the competence: designing problems]. *Vestnik FGOU VPO MGAU. Teoriya i metodika professional'nogo obrazovaniya. [Bulletin of Moscow State Agroengineering University. Theory and Methodology of Professional Education]*. № 6/1 (31). Moscow, 2008. P. 19–23. (In Russian)

6. Zhukova N. M., Kubrushko P. F. Podgotovka prepodavateley tekhnicheskikh vuzov k proektirovaniyu uchebno-programmnoy dokumentatsii v kontekste kompetentnostnogo podkhoda. [Preparation of technical colleges' teachers for designing of the academic programmes documentation in a context of competency building approach]. *Vysshee obrazovanie v Rossii. [Higher Education in Russia]*. 2008. № 9. P. 3–10. (In Russian)

7. Kubrushko P. F. Soderzhanie professional'no-pedagogicheskogo obrazovaniya. [The maintenance of professional-pedagogical education]. Moscow: Publishing House «Gardariki», 2006. 207 p. (In Russian)

8. Novikov A. M. Metodologiya uchebnoy deyatelnosti. [Methodology of educational activity]. Moscow: Publishing House «Egves», 2005. 176 p. (In Russian)

9. Ozhegov S. I. Slovar' russkogo yazyka: 70000 slov. [Russian dictionary: 70000 words]. Ed. by N. Yu. Shvedova. Moscow: Publishing House «Russian Language», 1991. 917 p. (In Russian)

10. Ushakov D. N. Tolkovyy slovar' russkogo yazyka. [Defining dictionary]. Ed. by D. N. Ushakova. Vol. 1. Moscow: Publishing House Veche, Mir knigi, 1996. P. 583. (In Russian)

11. Federal'nyy gosudarstvennyy obrazovatel'nyy standart vysshego professional'nogo obrazovaniya po napravleniyu podgotovki 051000 «Professional'noe obuchenie (po otraslyam)». Kvalifikatsiya (stepen') «bakalavr» [Federal State Educational Standard of higher education № 050100 «Professional Education». Master's degree]. Moscow, 2009. (In Russian)

12. Fridman L. M. Osnovy problemologii. [Problemology Bases]. Moscow: Publishing House «LIBROKOM», 2009. 224 p. (In Russian)

13. Khutorskoy A. V. Klyuchevye kompetentsii. Tekhnologiya konstruirovaniya. [Key competences. Technology of designing]. *Narodnoe obrazovanie. [Public Education]*. 2003. № 5. P. 55–61. (In Russian)

14. Shingareva M. V. Proektirovanie kompetentnostno-orientirovannykh zadach po uchebnym distsiplinam vuza. [Designing of the competence-based problems on high school subject areas]. Synopsis of cand. diss. Moscow, 2012. 22 p. (In Russian)

15. Hunter W. D. Global competencies. *Journal of Studies in International Education*. 2006. Vol. 10. № 3. P. 267–285. (Translated from English)

16. Hutmacher W. Key competencies for Europe. Report of the Symposium Berne, Switzerland 27–30 March, 1996. Council for Cultural Co-operation (CDCC). Secondary Education for Europe. Strasburg, 1997. (Translated from English)

17. White R. W. Motivation Reconsidered: The Concept of Competence. *Psychological Review*. 1959. № 66. (Translated from English)