

THE ROLE OF COMPETENCE APPROACH IN FORMATION OF FUNCTIONAL LITERACY OF LEARNERS

Nadezhda Khakhulina¹, Natalya Trukhina², Boris Ivanov³

¹Candidate of Technical Sciences, Associate Professor, Voronezh State Technical University, 20 years of October street, 84, Voronezh, Russia, E-mail: hahulina@mail.ru

²Doctor of Economic Sciences, Professor, Voronezh State Technical University, 20 years of October street, 84, Voronezh, Russia, E-mail: ntruhina@list.ru

³Physics teacher, KSU Educational Secondary School No. 3 named after Yu.A. Gagarina, E-mail: boris.ivanov.1951@list.ru

Abstract

One of the criteria for successful education is functional literacy, which serves as an important indicator of the civilization world. The task of any state in the process of preschool, school and subsequent education is to prepare a person adapted to modern life. Today, training is based on a competency-based approach that formulates certain requirements for the development of a discipline or specialty program. In the process of developing educational programs and curricula, teachers determine the content and strategies for effective learning, as well as introduce knowledge assessment systems. One of the significant disciplines in training is design or research activities, which are found at different levels and stages of education. The project approach in education allows you to get unique skills that you will not get with other teaching methods. In the work, a study was carried out on the design activities of learners, the development of the necessary competencies by them and the relationship of their participation in research and further fate. The paper presents the conclusions that research principles in teaching positively affect the development of personality and determine the direction of further activities of learners.

Keywords: competency-based approach, functional literacy, project-oriented training.

I. INTRODUCTION

The key task of education in the modern world is the task of preparing the learnerst for a uneasy life, i.e. the need to fully function in all spheres of human activity: family, work, state and other spheres and be able to quickly adapt and transform in accordance with changing trends. [6] The result of successful graduation is the student's functional literacy. For any state, functional literacy is an indicator of the development of society, therefore, in the process of teaching children, the goal is determined in preparing a person adapted to the modern world: competition, mobility, professionalism, family relations, the work team, and at the same time be and remain a self-sufficient person. But all the knowledge that must be obtained for the successful development of functional literacy must be measurable, and for this, in the study of academic disciplines, competencies are introduced that are clearly formulated requirements aimed at a specific result. Competence is a set of knowledge, skills and abilities necessary for the practical development and achievement of the goal.

The purpose of the study is to analyze the results of the competency-based approach in the process of implementing project-oriented training and its impact on the functional literacy of learners and their future fate.

II. METHODOLOGY

In this study, such scientific methods were used as: problem-chronological and analytical, which consisted in the collection and analysis of research materials for more than a 20-year period; statistical on the basis of which selection and comparison of the studied characteristics was made, among which one can single out overall performance, independence, group work, performance indicators, success in continuing education, choice of specialty, etc .; the method of scientific objectivity with the help of which objective knowledge of reality is achieved as a result of research activities; the method of critical analysis in the process of which determined the veracity and reliability of the information obtained as a result of the study of the competency-based approach to the formation of functional literacy of learners. The research materials included students' research projects in various disciplines, the effectiveness of which was assessed by such competencies as: the ability to work with information, the ability to think critically and non-standard, logically, competently and beautifully express their thoughts, communication skills and many others.

III. DISCUSSION

A large number of scientists, both in Russia and other countries, have been and are currently engaged in issues of competencies in education. We can distinguish scientific research in this area of Dr. J. Raven, which relate to the nature, development and assessment of competence and management of the education system and the mechanisms necessary to ensure its sustainability. The topic of developing competencies in order to implement functional literacy, value-semantic characteristics of the personality is also disclosed in the works of the authors R. White, Yu. Tatur and others. [4. 13, 14, 15, 17]

The development of competencies should have a vector in the practical direction, going beyond the framework of formal education, the limitations established by the system - such a thought is expressed by V.A. Scientists Bolotov, I.A. Winter, V.V. Kraevsky, A.G. Bermus, as well as several other authors. [1, 2, 6, 18, 19]

The following authors investigated various competencies: A.A. Verbitsky, V.A. Bolotov, I.A. Winter, J. Delors and many other scientists. A large number of works by these authors, as well as many others, are devoted to the topic of competencies in education, their applied value to future professional activities: Bidenko, E.F. Seer, K. Skala, M.Yu. [3, 13, 16] Halstead and so on. It should be noted that, unlike the Russian education system, the Western educational community has been using the competency-based approach for decades and has accumulated a sufficient evidence base for research in this area.

IV. RESULTS

Now the education system in the territory of the CIS countries is actively moving to a competency-based approach. The basis of the study of any discipline is the development of competencies formulated at the beginning of the course and the task of which is to acquire knowledge to ensure professional activity. Forms of mastering competencies can be different: individual work or group lessons, research work, practical work or experiments, but the main goal - mastering competencies, must be achieved.

In the process of developing educational programs and curricula, teachers determine the content and strategies for effective learning, as well as introduce knowledge assessment systems. Teachers determine the content, goals and objectives of training for the course and for each lesson, they also introduce measurable indicators of what the student must demonstrate after the completion of the course and after each lesson. With the help of such a phased assessment of the knowledge gained, the effectiveness of training will be determined. Competency-based education (or based on results) is reversed, i.e. first, the results that need to be achieved are determined, and then the content, goals and objectives of the training for the course and each lesson are formulated that will give these desired results, and the evaluation mechanisms that will interpret the data on whether these results were really achieved are determined. Thus, with an effective approach, the educational process goes from the desired results to the substantive part of the learning process, teaching methods and technologies. [4] An important point is that competency-based learning is measurable learning, and the teacher's task is to set goals that are measurable or observable, and ask yourself a few questions: "What does the student need to know in order to fulfill this competency in predetermined level? ", "How do I know that competency is mastered? ", "How can I define a mastered skill? ", "What measuring tools will show this? ".

One of the significant disciplines in training is design or research activities, which are found at different stages of education - school, college, university. Project activities are characterized by such competencies as educational, informative, informational, communicative, cultural, value-semantic, and others. At the same time, such personal qualities are manifested as: non-standard thinking, critical thinking, independent

cognitive activity, ability to work in a team, etc.

The accumulated experience of the authors of the work allows us to hypothesize that work on a scientific project or research activity in the learning process changes the student's way of thinking, while developing abilities towards extraordinary thinking, searching for information outside the textbook, and the ability to cooperate with participants in the creative group.

The paper analyzed and researched factual material from 1998 to 2019 on projects carried out in physics, geography, and biology. The following tasks were set for the participants of the projects: formulation of the research topic; setting goals and objectives; conducting research; development of competencies; protection or presentation of the project; evaluation of the results.

The authors of the study had the following tasks: to assess overall performance and changes in it as they were introduced and participated in research and scientific activities of project participants; to track the future direction of students after graduation, i.e. to trace how much research has influenced the choice of specialty and direction in later life; to study the relationship of special knowledge on the subject and methods of socialization of project participants.

An analysis of the learners' project work showed that among the participants in the project activity in half the cases the result was unsatisfactory. Pupils could not independently formulate goals and objectives and even with the help of project managers the situation did not improve. This was especially pronounced in the late 90s and early 2000s, perhaps the situation was affected by the difficult economic situation and low information availability. The remaining group of participants successfully completed all the tasks set, while interest in research influenced overall performance. She improved in other subjects that were not involved in the projects. Since the mid-2000s, the percentage of successful projects has increased, and already 70% of students coped with the tasks. The experience of previous years affected, many successfully completed projects were an example for beginners. In the process of preparing the project, the competencies of educational, informational, communicative are mastered.

The projects were protected at different levels: school, university, interuniversity, regional, republican. To go to the next level, you need to achieve the status of "best project" at a certain stage. In the process of protecting design work, the general cultural, value-semantic and other competencies are additionally mastered and evaluated.

Scope of the results.

The results of learners' work are used during training as: a) examples of successful and productive activities; b) additions and expansion of material for research topics.

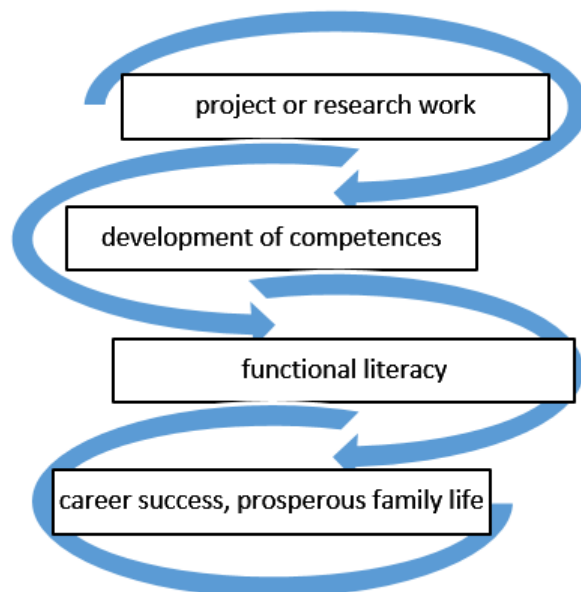
The materials of the work are workers and, in addition to the use by teachers and learners, an exhibition or stand "The best research work of learners" is arranged.

When working on projects, learners eventually form a series of competencies that are expressed in the ability to independently interpret, systematize, critically evaluate and analyze the information received from the standpoint of the tasks set in the work process; skills in setting and solving ordinary and non-standard problems; achieving goals.

When working on projects, learners used the following working methods:

1. Search and collection of information.
2. Processing and analysis of information.
3. Information transfer in the process of project protection.
4. Comprehensive methods: preparation and defense of a project, research work involving various research methods, including laboratory observations, experiments, etc.

The use of mathematical methods to process the data obtained, as well as the competent presentation of the results in the form of a structured scientific text, drawing conclusions, etc. In addition to the above, in the work on the projects, a system of methods of problem-research training in the discipline was used. Widely used innovative methods. They determined the nature of the cognitive activity of schoolchildren: a research, problem-discussion method for collective problem solving when a group of learners worked on a project.



According to the information collected by the authors about the future of the participants of scientific school projects, the analysis of the activities of graduates was carried out. The main task was to understand how much research activity in the school influenced the choice of profession and whether they associated their work with research or science. As a result of a long-term study, it was found that 61 % of participants in project activities, which can be considered successful, associated their activities with the technical direction, 71% of them created families . 60% are successful in careers related to engineering and technology activities. The results obtained in the course of the study can be displayed in the form of a diagram, which shows the relationship between the transition from successful participation in project activities through the development of necessary competencies to functional literacy and in the successful development of a profession and well-being in family life. Of course, participation in project activities does not guarantee the final result presented in the scheme, but the probability of such a positive outcome will still be higher.

V. CONCLUSION

Summing up the intermediate result of pedagogical work, we can say unequivocally that project and research activities at school age give impetus to further development of personality. Project and research activities-a means of self-development of students, and the most important task of the teacher-to teach them to think, create, achieve goals. As a result, each student has his own destiny, someone continued his research activities, someone dramatically changed the direction, but what was laid in them in school years-gives them the opportunity not to get lost in this complex world.

Many graduates continue their studies in technical and other higher educational institutions of different countries of the world, realized as excellent, which confirms the effectiveness and importance of classes in design and research activities with learners.

REFERENCE LIST

- Bazhin, A.C. (2007) Career and professional competencies of specialists / A.C. Bazhin // Higher education today. No. 9. Pp. 37-39. (in Russian).
- Bermus, A.G. (2005) Problems and prospects of the implementation of the competency-based approach in education. Electron, resource. / A.G. Bermus // Internet magazine "Eidos". 10 September. - Access mode: <http://www.eidos.ru/journal/2005/0910-12.htm>. (in Russian).
- Bidenko, V.I. (2004) Competencies in vocational education: to the development of a competency-based approach / V.I. Bidenko // Higher education in Russia. No. 11. - Pp. 3-13. (in Russian).
- Bokov L.A., Pozdeeva A.F., Zamyatina O.M. Soloviev M.A. (2014) Project-oriented educational technologies in the training of elite specialists. International Journal of Applied and Basic Research. No. 1. - Pp.

105-109 (in Russian)

- Ershov B.A. (2010) The Russian Orthodox Church and secular power in the Voronezh province in the XIX - early XX centuries. *GOU VPO "Voronezh State Technical University". Voronezh.* 167 p.
- Ershov B.A. (2010) The system of spiritual education in Voronezh province in the 19th century. *Education and Society. № 5 (64).* Pp. 105-108.
- Ershov B.A., Fursov V.N. (2018) [The Russian Church in the State Mechanism of Russia. *Bulletin Social-Economic and Humanitarian Research. № 1.*](#) Pp. 32-37.
- Ershov B.A., Perevozchikova L.S., Romanova E.V. (2019) [Globalization and Intensification of Spiritual Values in Russia in the Philosophical Aspect. *6th International Conference on Education and Social Sciences Abstracts & Proceedings.*](#) Pp. 208-212.
- Ershov B.A., Perevozchikova L.S., Romanova E.V., Ashmarov I.A. (2019) [The Concept of Spirituality in Social Philosophy. *Smart Innovation, Systems and Technologies. T. 139.*](#) Pp. 688-694.
- Frumin I.D. (2018) Universal competencies and new literacy: what to teach today for tomorrow's success. Frumin I.D., Dobryakova M.S., Barannikov K.A., Remorenko I.M. Preliminary findings of the international report on school education transformation trends / Moscow. Ser. No.2 (19) Modern analytics of education. (in Russian).
- Gavrilyuk, V.V. (2006) Overcoming functional illiteracy and the formation of social competence / V.V. Gavrilyuk // Sociological studies. No. 2. - Pp. 105-110. (in Russian).
- Gerish T.V. Competency-based approach to learning. Gerish T.V., Samoilenko P.I. Specialist. 2012. No. 3. Pp. 30-34. (in Russian).
- Halsted, M.Yu. (2001) Key competencies in the UK assessment system / M. Yu. Halstead, T. Orgey // Modern approaches to competency-based education: Seminar materials: ed. And V. Velikanova. - Samara. 20 p. (in Russian).
- Higher education in the 21st century. (1998) Approaches and practical measures. World Conference on Higher Education / UNESCO. Paris -23 p. (in French).
- Khakhulina N.B. Environmental engineering in educational and design activities. Khakhulina N.B., Ivanov B.I. Environmental models and technologies (regional aspect). 2019.No 1 (8). Pp. 26-29. (in Russian).
- Kilpatrick V.Kh. (1925) Project Method. The use of the target setting in the pedagogical process. Brockhaus - Efron, 245 p. (in Russian)
- Pakhomova, N. Yu. (2000) Educational projects: its capabilities. Teacher. No. 4.- Pp. 52-55. (in Russian)
- Romanova E.V., Perevozchikova L.S., Ershov B.A. (2017) [The Lifestyle of the Human Being in the Information Society. *3rd International Conference on Advances in Education and Social Sciences Proceedings of ADVED*](#) Pp. 950-954.
- Scala, K. Social Competence. Key competencies Electronic resource. / K. Skala. Access Mode URL: www.uni-protokolle.de/Forum/. (in German).
- Stoof, A. (2004) What is competency? Constructivist approach as a way out of confusion // Transl. with eng. E. Orlov Electronic resource. / A. Stoof, R. Martens, J.G. van Merriënboer Jeroen. Open university of Netherlands - Access mode URL: www.ht.ru. (in Russian).
- Tatur, Yu.G. (2004) Competence in the structure of the quality model of specialist training1 / Yu.G. Tatur // Higher education today. No. 5.- Pp. 20-26. (in Russian).
- Verbitsky, A.A. (2004) Competency-based approach and contextual learning theory / A.A. Verbitsky. M.: Publishing House "Research Center for the Problems of Quality of Training of Specialists." - Pp. 12-17. (in Russian).
- White, R. (1959) Revision of the concept of motivation: the concept of competence ("Motivation reconsidered: the concept of competence") / P. White // I Psychol. Rev. 16 p. (in English).
- Winter I.A. (2015) General culture and social and professional competence of a person. Higher education today. No. 11. Pp. 14-16. (in Russian).
- Winter I.A. (2015) Key competencies - new paradigm for the result of education Higher education today. No.

5. Pp. 34. (in Russian).

Zeer E.F. (2019) Strategic guidelines for the training of teachers for the system of continuing professional education. Zeer E.F., Tretyakova V.S., Miroshnichenko V.I. Education and science. T. 21. No. 6. Pp. 93-121. (in Russian).