

DEVELOPING COGNITIVE INDEPENDENCE OF SCHOOLCHILDREN THROUGH THEIR INVOLVEMENT IN RESEARCH ACTIVITIES

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Abstract

The paper focuses on developing cognitive independence of schoolchildren while teaching them how to organise and do research. It aims to reveal educational potential of research activity as a means of developing students' creative skills and forming independence, being one of the key personality traits necessary for future independent life. The paper contains information on the research-based method of teaching, its history and significance in current education. It shows the connection between the research-based method and learning outcomes: subject-specific, meta-subject and individual. Special attention is paid to cognitive universal learning skills. Their mastering is pivotal for developing cognitive independence, which is one of the basic personality traits every student currently needs.

The description of research-based activity of schoolchildren involves the analysis of the case study method and the project method. The paper considers the issues related to the potential of using the case-study method for developing schoolchildren's motivation and zest for learning, as well as for mastering educational material successfully by stating a problem, understanding the situation in which it arose, and the necessity to search for the ways to solve the problem. Research activity of schoolchildren is described based on the analysis of the project method. The paper identifies the aim and objectives of project activity, and the sequence of actions involved in working on projects. It also analyses the significance of project activity for the development of students' research skills and cognitive independence. The authors argue that it is necessary to actively implement research activities in the educational process in order to achieve individual, meta-subject and subject-specific learning outcomes.

Keywords: cognitive independence, research activity, case study, project activity, cognitive universal learning skills

1. INTRODUCTION

The issue of cognitive independence has been studied for a long time but remains topical in current theoretical and practical research in education. The development of cognitive independence is currently associated with involving students in research activity which has the potential to develop creative skills and independence being one of the leading personal traits necessary for future independent life. The possibility to organise a successful research activity is proved through the use of developmental technologies which are widely implemented in current education.

2. MATERIALS AND METHODS

First attempts to organise the learning process involving the use of the research-based method which encourages students' cognitive independence were made by Soviet scientists in the 1920s. The idea of developing cognitive independence was supported by N.K. Krupskaya, P.P. Blonskiy, A.M. Peshkovskiy and others, but the research-based method could not be implemented due to the lack of theoretical foundations of problem-based teaching in pedagogical theory and practice, and apparent overestimation of students' readiness and ability to do research.

The interest in students' research activity rekindled in the 1960s and was associated with independent work and independent cognitive activity, which is reflected in the works of M.A. Danilov, B.P. Esipov, M.S. Lapatukhin, I.I. Malkin, G.N. Pristupa, M.N. Skatkin, I.R. Palea and other scientists. Steady theoretical foundations of using the research-based method as part of independent cognitive activity of students were laid in the 1970-80s in the works of Y.K. Babanskiy (Babanskiy, 1977), T.I. Shamova (Shamova, 1979), P.I. Pidkasistyj (Pidkasistyj, 1972) and others.

Identification of pedagogical conditions for organising student research activities resulted in the necessity to develop and implement developmental technologies: case studies, project activities, information and communication technologies and others. Hence, O.V. Arefeva and S.A. Arefeva developed a technology aimed to be used to develop independence as a quality of student personality, which involves a system of interrelated and interdependent components: aim-based, content-based, activity-oriented, and result-oriented (Arefeva, 2013).

The case study technology, which foundations were laid in the Harvard Business School in the 1920-s, got a wide recognition and was used in comprehensive schools and universities. Later it was analysed in the works of such researchers as Michael Burawoy (Burawoy, 1977), E.S. Polat (Polat, 2000), L.V. Reyngold (Reyngold, 2000), O.G. Smolaninova (Smolaninova, 2000), T.I. Shamova (Shamova, 2005), and others. Research into the case-study technology helped to identify its essence – the analysis of a concrete situation in the form of a business game; and the content – a developing pedagogical technology aimed at the formation of cognitive independence and creativity of learners in the process of their interaction.

The research activity of schoolchildren done through the use of the project method was reflected in the technology of project activity which is aimed at the development of students' research abilities in the process of carrying out research projects. The project activity was successfully implemented in middle schools prior to choosing the major field of study by schoolchildren and in high schools while raising their professional awareness. In these cases project activity is implemented with regard to the main subject area: physics, mathematics, physics and chemistry, chemistry and biology, social sciences and the humanities, linguistics, and others. The significance of the project activity lies in the development of cognitive independence of students aimed at choosing their future profession.

3. RESULTS

The use of the research-based method is aimed at developing learning outcomes: subject specific, meta-subject, and individual. Subject specific learning outcomes are related to subject specific knowledge. Individual universal educational activities are aimed at developing students' personality traits in course of their studying an academic subject. Meta-subject learning outcomes include meta-subject concepts constituting the basic knowledge used to achieve educational objectives and do meta-subject universal learning activities: regulatory, cognitive and communicative. Cognitive universal learning activities which contribute to the development of students' cognitive independence are of greatest interest for the organisation and implementation of research activities. These learning activities include general educational, symbolic, logical and learning activities aimed at defining and solving a problem.

Developed cognitive learning activities allow students to carry out various types of independent activities (reproductive, reconstructive and variable, creative) using different types of independent work – from doing

template-based activities to doing research projects and solving problem-based situations.

Thus, the importance of involving schoolchildren in research is stipulated by the possibility of achieving personal, meta-subject and subject specific learning outcomes. Particular importance is given to the development of cognitive independence being a personal quality of students.

4. CONCLUSION

Cognitive independence of students is developed through their involvement in independent work in the process of independent cognitive activity and is aimed at the development of different types of independence: reproductive, reconstructive and variable and creative. All kinds of independence are interrelated and interdependent, there are in hierarchical relations, and their development is determined by instructional, developmental and educational goals.

Thus, independent work is a means of involving students in research activities. Independent work plays an important role in the development of independence being students' personal quality, which influences the development of a personality's intellect, emotions and strong will. Independence is an integral quality of personality allowing the person to be successful in educational, scientific, everyday, aesthetic, official and socio-political spheres of human communication.

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