

EKOLOGIA I RACJONALNE ZARZĄDZANIE PRZYRODĄ: EDUKACJA, NAUKA I PRAKTYKA

Część 2.

ЕКОЛОГІЯ ТА РАЦІОНАЛЬНЕ ПРИРОДОКОРИСТУВАННЯ: ОСВІТА, НАУКА І ПРАКТИКА

Частина 2.

Redakcja naukowa:

Zoia Sharlovych

Janisz Lisowski

Ruslana Romaniuk



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Recenzenci:

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Podyplomowego Rozszerzenia", Chersoński Państwowy Uniwersytet Rolniczo-Ekonomiczny

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FORMATION OF STUDENTS' ORGANIZATIONAL RESEARCH SKILLS IN THE PROCESS OF STUDYING NATURAL DISCIPLINES

*Myronchuk Nataliia, Doctor of Sciences (Pedagogy), Docent,
Zhytomyr Ivan Franko State University
myronchuknm@gmail.com
<https://orcid.org/0000-0002-1360-6381>*

The article states the position that research activity contributes to students' acquisition of skills in a universal way of mastering reality, development of their ability to research type of thinking, activation of personal position and research behaviour. The components of organizational skills are named. A conclusion was made about the relevance of the development of students' organizational research skills based on the research of scientists. Forms of work for the development of organizational and research skills of students in the disciplines of the natural cycle are outlined.

Key words: *research activity, organizational skills, students, environmental projects, disciplines of the natural cycle, Scientific Lyceum.*

Introduction of the issue. The problem of organizing research activities of students of scientific lyceums is an urgent task of education. The research activities of secondary education students contribute to the formation of scientific knowledge and skills, including the ability to analyze and process information, think critically, systematize and generalize, identify hypotheses and formulate conclusions. Research activities contribute to the formation and development of cognitive interest in the subject, reveal the creative abilities of students, lay the foundations for awareness of their abilities and help to develop an attitude towards professional self-determination. The ability to carry out research activities involves the formation of analytical, prognostic, designing, organizational, communicative, etc. skills. An important role in the performance of research belongs to organizational skills as a conscious ability of students to perform their actions productively and effectively.

Current state of the issue. The problem of forming students' organizational research skills is considered in the context of the following approaches: neuroscientific (N. Voitenko, H. Seli, M. Dembo), psychological (M. Dembo, V. Rybalka, O. Yakovenko), sociological (P. Drucker, M. Lukashevich, K. Romero-Perez, E. Sanchez-Lissen), phenomenological (D. Jacobsma, M. Hall, etc.), pedagogical (J. Agolla, M. Dembo, N. Dudnik and etc.) [5]. Scientific and methodological foundations of the organization of students' research activities in the educational process and extracurricular activities are the sphere of scientific interests of I. Voloshchuk, L. Holodyuk, O. Zabolotnyi, P. Moroz, N. Orynychak, N. Polikhun and others. Scientists L. Matiushko [3], P. Moroz and I. Moroz [4], G. Tleubaeva [7] find out the essence, content, strategies of students'

research search, consider methods of organizing students' research activities in the process of learning academic disciplines.

The researchers also reveal the practical foundations for organization of students' research search in the educational process: in the lessons of chemistry (S. Kosnazarov), biology (O. Dzyubenko); in extracurricular activities: biology (T. Lazarevich, T. Pribichevich, D. Fitz), ecology (B. Eilam, I. Aaron).

Aim of the publication is to outline ways of developing students' organizational research skills in the process of studying natural disciplines.

Results and discussion. Organizational skills are meta-subject and are manifested in the ability to rationally organize educational/research activities and consistently perform tasks, take into account intermediate results and, if necessary, adjust one's actions to achieve the set goal. Organizational skills include the following skills: to understand the purpose of the activity, determined independently or under the guidance of a teacher/supervisor; independently determine the purpose of the activity and tasks for its achievement; to plan activities – to design the sequence of actions and methods of performing tasks; determine the priority of tasks and allocate time for their implementation; develop a task performance algorithm; to change the activity plan in connection with a change in the terms of execution; produce different options for solving the same problem; to originally combine various methods, techniques and means of performing the task; be able to use the acquired experience; work individually and organize research activities in a pair, group, team; organize a workplace; to predict the result of activity.

In the study of V. Lamanuskas and D. Avgin [2] it was concluded that the involvement of high school students in research activities is insufficient. The scientists found out that the majority of students, based on the self-assessment method, determine that they have an insufficient (average or low) level of development of the following research skills: the process of conducting research (65.3%), planning research (81.3%), choosing a method (methodology) research (79.9%), definition of the research problem (88%), description of the research (drafting of the report) (82.3%). The researchers conclude that the research work at the school is not focused on the development of the respondents' abilities, and therefore the process of conducting the research is perceived as an ordinary activity. Analyzing the research activity of the respondents, they note that students prefer searching for information on the Internet, excursions based on ecological research and avoid such activities as preparing various ecological/natural projects, conducting various experiments at home, etc.

Our study [5] also showed the inadequacy of the work of teachers on the development of students' organizational research skills.

Formation of students' organizational skills can take place in the process of solving research problems, experimental problems, carrying out experiments, experiments in chemistry and biology

classes. During these types of activities, students consistently acquire the ability to think about a problem, think about a hypothesis, design problems, make a detailed plan of an experiment, organize and conduct an experiment, and draw conclusions. An effective method of developing students' organizational skills is to include them in various environmental projects and research groups, where they have the opportunity to work in a team, share their knowledge and experience with other project participants. A personal approach to each student, which takes into account his individual characteristics, needs and interests, is extremely important.

By performing research tasks, students become participants in the process of self-education, update the necessary knowledge, learn to effectively plan activities and analyse the results of their activities.

Effective forms of work for the development of students' organizational research skills are interactive scientific seminars (T. Lazarevich, T. Pribichevich, D. Fitz) [6], scientific circles (N. Kirgizova) [1], problem groups, etc.

Conclusions and research perspectives. The formation of students' organizational skills contributes to the effectiveness of their research activities. The system of research tasks within the study of school subjects of the natural cycle should include elements of experimental, search, constructive and projective actions, oriented to obtaining a result with the characteristics of non-standard, originality, originality. Such forms of student scientific work as scientific seminars, scientific circles, project groups, etc. are effective. Prospects for further work are the description of methods, as well as educational and training tasks and exercises for the development of students' organizational research skills.

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