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IMPLEMENTATION OF THE PEDAGOGICAL EXPERIMENT ON THE ISSUES OF FORMATION OF THE READINESS OF TEACHERS OF NATURAL SPECIALTIES TO THE DEVELOPMENT OF ENTREPRENEURIAL ENTERPRISE

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Abstract

Institutions of postgraduate pedagogical education provide the formation of readiness of teachers, including natural sciences, to develop entrepreneurial competence of high school students, which became the basis of experimental pedagogical research.

The author defines the task: to identify the conceptual principles of the organization of experimental and pedagogical research to determine the readiness of teachers of natural specialties to develop entrepreneurial competence of high school students; to characterize the stages of implementation and analyze the methodological tools of pedagogical experiment.

Experimental pedagogical research "Formation of readiness of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students" involves establishing patterns of professional growth of teachers and identifying their readiness to implement entrepreneurial competence in practice.

This pedagogical experiment was implemented from August 2015 to June 2019 and included the following stages: ascertaining, formative and generalizing.

Based on the theoretical research, we have developed the stages, content and methods of experimental work performed within the dissertation research.

The results of the pedagogical experiment testify to the positive dynamics of the formation of the readiness of teachers of natural specialties of experimental groups for the development of entrepreneurial competence of high school students in the system of postgraduate pedagogical education.

Keywords: teacher training; entrepreneurial competence; experiment; pedagogical experiment; levels of teacher formation.

РЕАЛІЗАЦІЯ ПЕДАГОГІЧНОГО ЕКСПЕРIMENTА З ПИТАНЬ ФОРМУВАННЯ ГОТОВНОСТІ ВЧИТЕЛІВ ПРИРОДНИЧИХ СПЕЦІАЛЬНОСТЕЙ ДО РОЗВИТКУ ПІДПРИЄМНИЦЬКОЇ КОМПЕТЕНТНОСТІ СТАРШОКЛАСНИКІВ

Наталія Костянтинівна Куриш

**Інститут післядипломної педагогічної освіти Чернівецької області,
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Анотація

Заклади післядипломної педагогічної освіти забезпечують формування готовності вчителів, в тому числі і природничих спеціальностей, до розвитку підприємницької компетентності старшокласників, що стало основою експериментально-педагогічного дослідження.

Автором визначено завдання: виокремити концептуальні засади організації експериментально-педагогічного дослідження з визначення готовності вчителів природничих спеціальностей до розвитку підприємницької компетентності старшокласників; охарактеризувати етапи реалізації та проаналізувати методологічний інструментарій педагогічного експерименту.

Експериментально-педагогічне дослідження «Формування готовності вчителів природничих спеціальностей у системі післядипломної педагогічної освіти до розвитку підприємницької компетентності старшокласників» передбачає встановлення

закономірностей професійного зростання педагогів та виявлення їх готовності впроваджувати підприємницьку компетентність у практику діяльності.

Даний педагогічний експеримент реалізувався з вересня 2015 року по червень 2019 року і передбачав такі етапи: констатувальний, формувальний та узагальнюючий.

На основі проведеного теоретичного дослідження, нами було розроблено етапи, зміст та методику експериментальної роботи, виконаної в межах дисертаційного дослідження.

Результати педагогічного експерименту засвідчують позитивну динаміку сформованості готовності вчителів природничих спеціальностей експериментальних груп до розвитку підприємницької компетентності старшокласників у системі післядипломної педагогічної освіти.

Ключові слова: підготовка вчителів; підприємницька компетентність; експеримент; педагогічний експеримент; рівні сформованості вчителів.

Actuality of theme. Changes and reforms in the field of education require modern teachers to respond mobile and flexible to innovative approaches to the organization of the educational process and the renewal of the educational environment. The teacher needs to be prepared for such processes in order to successfully implement the components of the formula of the New Ukrainian School, including the competence approach outlined by the formation of key competencies, including entrepreneurship, which provides an opportunity to build individual educational trajectory of high school students.

Formulation of the problem. The successful implementation of the competency approach depends primarily on the readiness of teachers, therefore, institutions of postgraduate pedagogical education should ensure the formation of readiness of teachers, including natural sciences, to develop entrepreneurial competence of high school students. In order to develop a model for solving this problem, an experimental and pedagogical study was organized.

Analysis of recent research and publications

In the pedagogical literature there are different approaches to the definition of "pedagogical experiment":

- method of cognition, which contributes to the study of pedagogical phenomena, facts, experience [9];
- special organized pedagogical activity of teachers and students in order to test and substantiate pre-developed theoretical assumptions or hypotheses [11];

- scientifically set experience of transformation of pedagogical process in specifically defined conditions [6];

- active intervention of the researcher in the pedagogical phenomenon studied by him in order to discover patterns and change existing practices [5].

Theoretical and methodological principles of organization, conduct and processing of the results of pedagogical research are revealed in the works of Yu. Babansky [1], P. Volovik [2], S. Goncharenko [3], S. Sysoyev [7], V. Cherepanov, etc. [13].

Setting objectives. The purpose of the article is to reveal the method of preparation and conduct of a pedagogical experiment on the formation of the readiness of teachers of natural specialties for the development of entrepreneurial competence of high school students in the system of postgraduate pedagogical education.

To ensure the implementation of this goal, the following tasks were set:

1. to single out conceptual bases of the organization of experimental and pedagogical research on definition of readiness of teachers of natural specialties to development of business competence of senior pupils;

2. describe the stages of implementation of pedagogical experiment;

3. to analyze the methodological tools for determining the formation of the readiness of teachers of natural specialties for the development of entrepreneurial competence of high school students.

Presentation of the main research material. An important task of experimental pedagogical research "Formation of readiness of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students" is to establish patterns of professional growth of teachers and identify their readiness to implement entrepreneurial competence in practice. The explanation of certain patterns and laws is fully determined by the organizational and substantive component of the pedagogical experiment, which allows in controlled conditions to analyze in "pure form" the studied phenomenon and identify the most significant factors influencing the effectiveness of its operation [8, p. 201].

The relevance of this experimental and pedagogical work is determined by the need to develop a new direction in the content of education for the development of key competence entrepreneurship and training of teachers of natural specialties to implement it in educational activities.

The object of research and experimental work is the professional training of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students.

The purpose of research and experimental work was to theoretically substantiate and experimentally test the model of formation of readiness of teachers of natural specialties for the development of entrepreneurial competence of high school students in institutions of postgraduate pedagogical education, and the conditions of its implementation.

For successful realization of the certain purpose of research and experimental work the basic tasks of research are formulated:

1. To analyze the state of research of the problem of professional training of teachers for the development of entrepreneurial competence of high school students in foreign and domestic pedagogical theory and practice; to clarify the essence of the concepts "initiative", "entrepreneurship", "entrepreneurial competence" and "readiness of teachers of natural specialties to develop entrepreneurial competence of high school students."

2. To find out organizational and pedagogical conditions of preparation of teachers of natural specialties for development of business competence of senior pupils in system of postgraduate pedagogical education, and to carry out the analysis of research of a problem of introduction of ideas of business in teacher training.

3. To determine the components, criteria, indicators and levels of readiness of teachers of natural specialties for the development of entrepreneurial competence of high school students in the system of postgraduate pedagogical education.

4. Experimentally test the effectiveness of the model of formation of readiness of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students, and justify the organizational and pedagogical conditions of its implementation.

5. To develop educational and methodological support for the preparation of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students.

During the implementation of the pedagogical experiment we used the following research methods: theoretical to develop methodological foundations and determine the possibility of further implementation of experimental research, problem-target method (for analysis of scientific literature), method of system-structural analysis (for retrospective analysis of psychological development), pedagogical theory on the researched problem), methods of analysis and synthesis, development of diagnostic tools and determination of ways

of further researches of the posed problem; empirical (questionnaires, observations, surveys, situational exercises, self-assessment, self-examination) were used to carry out the initial diagnosis of the formation of the readiness of teachers of natural sciences to develop entrepreneurial competence of high school students; experimental used to test the structural model of training teachers of natural sciences for the development of entrepreneurial competence in the system of postgraduate pedagogical education, through the introduction of formal, non-formal and informal education of teachers of natural sciences; the method of mathematical statistics of processing of research results was used for collecting and processing of experimental data of initial and final diagnostics of formation of readiness of teachers of natural specialties to development of business competence.

Experimental work was carried out during September 2015 to June 2019 in three stages: I - constitutive, II - formative, III - generalizing stage. The experiment covered 211 teachers of natural sciences. The experimental groups included 108 teachers of natural specialties, the control - 103. Teachers of natural specialties of experimental and control groups did not differ significantly in the level of formation of individual indicators of professional awareness of entrepreneurial competence (teachers of the highest category were involved), which allowed to provide a unified approach to formation of groups at the beginning of the study. Research and experimental work was carried out on the basis of postgraduate pedagogical education institutions of Ukraine and was focused on testing the effectiveness of the developed methodology for the formation of professional skills of teachers of natural specialties in entrepreneurial competence.

According to the logic of scientific research, experimental work was natural (implemented in a real educational process); linear (carried out in separate creative groups: control and experimental); open (during the adjustment and adjustments were made) and test (conducted to confirm the hypothesis).

The first stage of research and experimental work (ascertained September 2015 - August 2016) took place in two stages, which provided: preparatory-theoretical, which revealed the theoretical foundations of the organization of pedagogical experiment and shortcomings in the organization of the educational process of postgraduate pedagogical institutes education, instructional and diagnostic stage, which became the basis for a study aimed at correcting certain problem situations.

As part of the ascertainment stage, the potential of the subjects of research was studied, the basic institutions of postgraduate pedagogical education for pedagogical experiment were determined and creative groups of teachers of natural specialties were

formed: geography, biology, chemistry, physics, astronomy, basics of health, ecology.

For the successful organization of the experiment, at this stage, training and preparation of scientific and scientific-methodical workers of the basic Institutes of postgraduate pedagogical education, which were to provide formal, informal and informal educational activities with teachers of natural sciences.

Diagnostic tools have been developed to determine the level of awareness and formation of entrepreneurial competence in teachers of natural specialties and to determine the level of their readiness to develop this competence in high school students.

The main method in determining the level of readiness of teachers of natural specialties for the development of entrepreneurial competence of high school students used expert assessment. The method of expert assessments involves the procedure of analytical and synthetic activities of specially selected for this purpose experts [10, p. 16]. Experts were selected from scientific and methodological staff of institutes of postgraduate pedagogical education, who have a sufficient level of scientific and pedagogical training, experience in developing entrepreneurial competence in teachers, were participants in international projects "School Academy of Entrepreneurship" and "Lessons with an entrepreneurial background" and take an active part in education. and the social and developmental process of the educational institution. The identified experts were involved in a pedagogical experiment to perform diagnostic functions. The total number of experts in the experiment was 5 people (teachers and methodologists of natural specialties). Expert assessment is based on the use of professional experience of teachers and methodologists in solving professional problems [12].

Thus, all methods presented digital indicators of low (reproductive), medium (reproductive-reconstructive), sufficient (reconstructive) and high (creative) levels of formation of individual qualities of teachers, which together characterize the readiness of teachers to develop entrepreneurial competence of high school students in the future. professional, pedagogical activity.

The third stage of research and experimental work - generalizing (June 2018 - June 2019) provided: provided: adjustment of theoretical and methodological aspects of the results; introduction of a structural model of formation of readiness of teachers of natural specialties in the system of postgraduate pedagogical education for the development of entrepreneurial competence; development of recommendations for the implementation of the results of research and experimental work in institutions of postgraduate pedagogical education and general secondary education; preparation of the final report on the results of experimental work.

One of the manifestations of teachers' readiness to develop entrepreneurial competence is the development of lessons in natural sciences for high school students with an entrepreneurial background. At the generalizing stage, teachers conducted open classes, presenting the skills acquired during the experiment. A total of 108 lessons were attended by teachers of natural specialties of experimental groups in grades 10-11 of general secondary education institutions.

At this stage of research and experimental work, a final analysis of the level of formation of entrepreneurial competence in teachers of natural specialties participating in the experiment was determined and their readiness to develop this competence in high school students was determined.

Analysis of the results of the experiment showed that teachers of natural specialties of the experimental group have a much higher level of readiness in the system of postgraduate pedagogical education for the development of entrepreneurial competence of high school students than teachers of the control group. This is evidenced by fixed positive changes in the levels of readiness of teachers of natural sciences in the experimental groups: the number of teachers with a high (creative) level of development of this formation has doubled, and the increase is 15.7%, with a sufficient level of formation increase is 14.9%, and at the low and middle levels there was a decrease in the number of teachers by 8.3% and 22.3%, respectively.

Based on the system-generalizing approach at this stage, the conclusions based on the results of scientific research were systematized and further ways of their implementation were worked out.

Conclusions from this study

The results of the pedagogical experiment show positive changes in the formation of components of readiness of teachers of natural specialties of experimental groups to develop entrepreneurial competence of high school students in the system of postgraduate pedagogical education and convince of the appropriateness and effectiveness of reasonable pedagogical conditions

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