WAYS TO DEVELOP STUDENTS' RESEARCH COMPETENCIES IN TEACHING COMPUTER SCIENCE

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ANNOTATION

This article shows the ways of developing students' research competencies in teaching computer science. Tasks are given for the implementation of the "research" technology for small groups as well.

Keywords: competency approach, research competencies, research technology, research, research groups, mini-research.

To date, a wide range of conditions has been created for the formation of the legal foundations of the national education system in our republic. In turn, the reforms have improved the structure and content of education.

As the President of our country Sh. M. Mirziyoyev noted, "We consider it our priority to improve the activities of all parts of the education and upbringing system based on modern requirements".

Education is a key factor in reforming society and turning it into a society more open to the outside world and focused on new technologies and knowledge. It clears and defines and determines not only the prospect of society, but also special activities of everyone.

In order to improve the quality of education, in recent years, training based on a competence-based approach has been organized throughout the education system. The use of a competence-based approach in teaching other disciplines, especially computer science, for the organization of teaching and training students concepts of science based on vital relationships is an urgent and fundamental factor of modern education.

Today, stability in the labor market requires every specialist to have professional competence, constantly improve it.

"Competence" - the English concept of "competence" in lexical terms expresses the direct meaning of "ability". The content, on the other hand, serves to highlight "the effective use of

theoretical knowledge in activities, the ability to demonstrate a high level of professional competence, skills and talents".

The concept of "competence" entered the field of education as a result of scientific research by psychologists. From a psychological point of view, competence means "having a plan of action in non-standard situations, in unforeseen situations, in how a professional behaves, enters into a dialogue, behaves in a new way in interaction with opponents, in performing ambiguous tasks, in using information full of conflicts, in consistently developing and complex processes".

And professional competence is the acquisition by a specialist of the knowledge, skills and abilities necessary for the implementation of professional activities and their high level of application in practice.

Below we have given an example of a task based on the development of students' research competencies through the topic "statistical data processing in Excel and the construction of their diagrams".

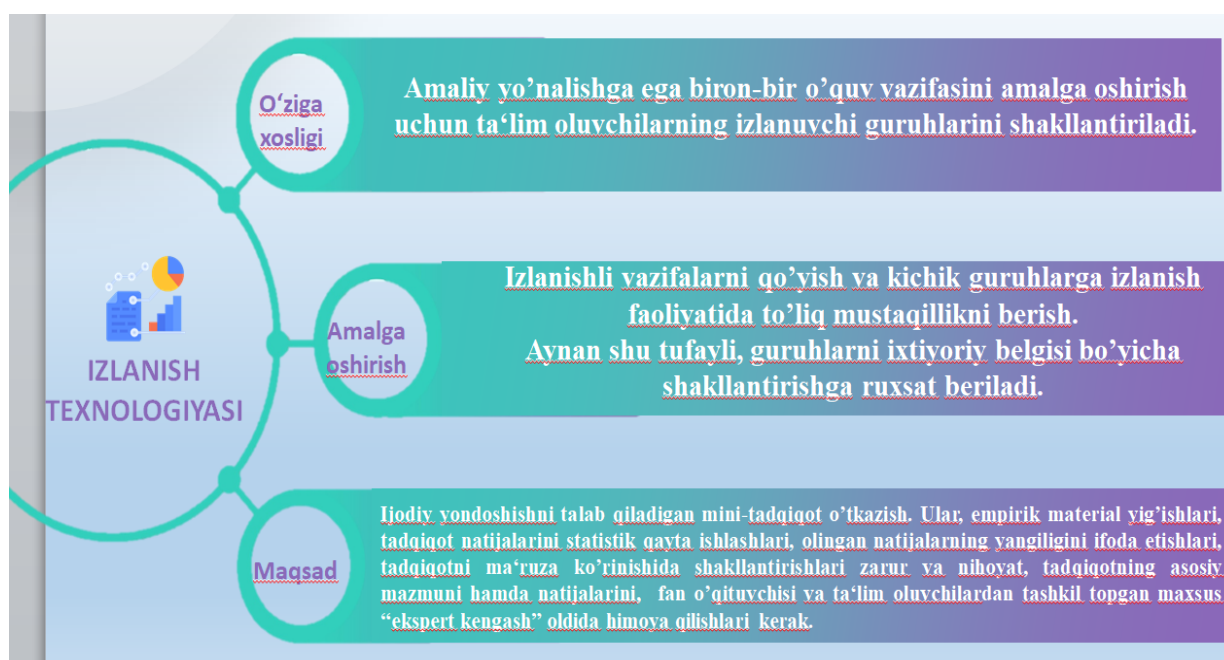Tasks are given to subgroups according to the research technology (Fig.1).

Figure 1. Research technology.

The specificity of this method consists in the formation of research groups applicants for education to perform any educational task or to perform practical work that has a practical orientation. The implementation of this method requires the imposition of highly problematic tasks and the granting of full independence in research activities to small groups. It is because of this that it is allowed to form groups on an arbitrary basis.

The purpose of their work is to conduct a mini - study that requires a creative approach. They should, by collecting empirical material, statistical processing of research results, express the novelty of the results obtained, formulate the study in the form of a lecture and, finally, defend the main content and results of the study before a special "expert council" consisting of a subject teacher and students.

Assignment plan:

1. Activities aimed at acquiring knowledge; problem statement.

2. Formation of an idea and hypothesis.

3. Selection and justification of research methods, reasonable formalization of the results obtained, theoretical substantiation of facts based on experiments.

At this link, O'zbekiston Respublikasi ochiq ma'lumotlar portali, https://data.gov.uz/uz/datasets/18034?dp-1-page=1 - information is provided on the income and expenses of state higher educational institutions as of October 1, 2021 (3rd quarter).

Through the information provided:

1. Enter the average value of the total cost of 61 higher education institutions and determine the maximum cost (in the form of a diagram).

2. Sort the minimum 10 of the income received through the payment agreement of 61 higher educational institutions and illustrate them in the form of a line diagram.

3. Sort over 25,000 and less than 55,000 incomes of 61 higher educational institutions at the expense of budgetary funds and illustrate them in the form of a corresponding diagram (Fig.2).

Figure 2. Tasks for research groups

The research groups will be given recommendations on the stages of conducting a mini-study that requires a creative approach:

1. **Collecting empirical material** - Students download a table with information on income and expenses of state higher education institutions as of October 1, 2021 (3rd quarter) (O'zbekiston Respublikasi ochiq ma'lumotlar portal, https://data.gov.uz/uz/datasets/18034?dp-1-page=1)

2. **Statistical processing of research results** - Students evaluate budget funds, funds of payment contracts, parts of development funds, average and highest total expenses, as well as the 10 lowest incomes received as a result of a payment agreement.

3. **Expressing the freshness of the results obtained** - Students of all three groups statistically process the tasks assigned to them and visually check whether the results obtained

correspond to reality by comparing them with the original data. Various diagrams express accuracy, resulting in form.

4. **Formation of the study in the form of a lecture** - Students write a generalized analysis of the research work cdrried out. It records the stages of the study of the task and statistical results.

5. **Protection of the main content and results of the study before a special "expert council" consisting of a subject teacher and students** - After that, the teacher, after listening to the defense of the research groups, makes final conclusions.

In conclusion, it is worth noting that such innovative educational technologies are necessary for teachers and students to develop and apply projects and supplies.

Nowadays, the problem of further improvement of the teacher's pedagogical skills is a requirement of the time. This means that today an important task is to work more actively with the younger generation, to form their worldview and moral principles that meet the requirements of modern society.

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