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FORMATION OF STUDENTS' RESEARCH SKILLS ON THE BASIS OF BASIC COMPETENCIES IN THE PROCESS OF TRAINING IN GENERAL SCHOOLS

Narziyeva Nargiza Norkuzievna[1], Begimkulov Zarif Ahmadovich[2], Oltiboyeva Feruza Malikovna [3]

[1] *SamVMI, The head of the Department of "Humanities, Physical Culture and Sport" Doctor of Philosophy of Pedagogical Sciences(PhD)*

[2] *The head of the Department of "Social Sciences" of Scientific and methodological support of specialists in physical training and sports,retraining and advanced training Center of Samarkand branch*

[3] *SamVMI, The assistant of the Department of "Humanities, Physical Culture and Sport*

Abstract

This article describes the formation of students 'research activities in general secondary education, the criteria for choosing the methods of planning and solving problems of students' research activities, and the pedagogical and psychological features and stages of their development. It also reveals the research skills of students based on their core competencies, the methods of developing research skills, and experimental work aimed at developing student's research skills.

Keywords: *research, activity, basic, competence, skills, skills, research skills, basic competencies, formation of research skills.*

INTRODUCTION

The international scientific centers of the world conduct scientific researches on creativity, mechanisms of preparation of schoolchildren for technical design, research activity, technologies of formation of general knowledge system, formation of research skills, possibilities of growth of research activity. These developments expand innovative approaches to select research areas and tasks, provide students with the opportunity to develop non-standard thinking and decision-making skills, constantly discovering new ideas, technologies, and finding and implementing them.

Necessary conditions for early detection and transfer of students' creative thinking, talents and research activity as a result of reforms in the country to improve the education system, educational and technical support, development of state educational standards and regulations for general secondary education, and introduction of advanced teaching methods - conditions have been created. At the same time, there is a need to improve the mechanisms for developing students' research skills based on the pedagogical capabilities of the basic competencies. The strategy of actions for further development of the Republic of Uzbekistan includes the following tasks: "Further improvement of the system of continuous education, radical improvement of the quality of general secondary education, upbringing of young people with independent thinking, devotion to the Motherland. Criteria for determining students' research skills based on their basic competencies, optimal pedagogical and psychological principles, and improving the methodological system are of great importance and enhance the quality and effectiveness of general secondary education.

Literature Review

Studies on the formation of research skills in students in the world education system are conducted by foreign and independent scientists from the Commonwealth countries. In particular, the research

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activities of students have been studied by scientists such as D.B. Bogoyavlenskaya [7], A.K. Brudnov [8], V.A. Dalinger [9], A.L. Spivak [23].

Problems of forming a scientific outlook at school age R.G. Safarova [18], N.Atakulova [5], the formation of research skills of students and formation of research skills A.Tojiev [19], studied by S.Yaminova [21].

Ideas on the formation of competence activities of students at school, teaching them on the basis of competences in the scientific researches are mentioned by scientists of the Republic of Uzbekistan including Y.M.Asadov [2], B.Daniyarov [10], U.I. Inoyatov [12], N.Sh. Turdiev [20], I.B. Askarov [3, 4] and foreign scientists who are S.I. Osipova [16], O.P. Merzlyakova [13]

The reforms in all areas of our society today also have an impact on secondary schools. New goals and objectives are set for the secondary schools. At the heart of all changes is the emerging student identity - his or her purpose and self-awareness and self-exploration, personality, and creativity.

General education schools are the content of education for the development of the student, his her education and professional orientation, and educational research is carried out when the school education is integrated with the activities of subsequent educational institutions.

The term “competence” came to pedagogy as a result of scientific research in psychology. Competence in psychology refers to “unconventional situations, how to behave in unexpected situations, to communicate, to the new ways of interacting with competitors, to have progressive and complex processes of acting in ambiguous tasks, using conflicting information” [22].

Also, the aims of preparation of future teacher of professional education to research activity it is been: forming of the special knowledge, research abilities, skills; forming and development of scientific world view and requirement is in permanent development of personality-professional internals, perfection of future professional activity; development of methodological culture of future specialist; upgrading of professional education [3, 4].

Teaching learners how to effectively use competencies formed in a variety of situations in personal, professional, and social life envisions refers to a new approach to education. Learners' competencies focus on using the knowledge, skills, and skills gained in the face of unexpected, problematic, new situations. Therefore, competences are formed in the course of teaching each subject in accordance with its content and characteristics.

The problem of formation and development of competence-based approach in students, Professor A. Abdukadirov notes like that the developing competencies is a lifelong process [1].

The research of our pedagogical scholars highlights specific aspects of professional and pedagogical competence. In particular, N.Muslimov mentioned six competencies in his research work:

1) Motivational traits (including the needs, motivations, and goals of a person's career, which he or she is developing and developing throughout his or her life);

2) Intellectual potential (the teacher strives to transfer information and data, to develop knowledge, skills and abilities based on all official documents);

3) Willow qualities (motivation, ability to overcome internal and external barriers, physical and mental stress, self-control and initiative);

4) Practical skills (psychological, pedagogical, methodological and technical-technological skills, actions, individual skills in various areas of activity and communication);

5) Emotional qualities (the formation of the necessary skills to manage their emotions (anger, anger, anxiety, anger, envy, sympathy, embarrassment, pride, fear, sympathy, love, etc.) and understanding their emotional states and causes;

6) Self-control (freedom to choose goals and means of achieving them, conscientiousness, critical approach to their activities, comprehensiveness and understanding of actions, self-esteem, confidence in the future, maintaining their physical and psychological state at the required level, etc.) [14].

In the world education system, research on the formation of elementary elements of research activities in students, the development of student research activities have been studied by scholars of foreign and independent Commonwealth countries.

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Research Methodology

The above data indicate the need for changes in the content of school activities and in the process of developing students' research abilities. Our research shows that:

- creation of a system for shaping research skills in students;
- to provide theoretical knowledge on the basis of pedagogical and psychological knowledge, which plays an important role in the formation of research skills of students in the course of science education;
- establishment of the necessary conditions for the integration of educational and production practices (pedagogical practice) with the purpose of developing students' research skills.

Our author's definition of the research skills of students is as follows: "The ability of learners to explore a particular problem (for example, a situation based on a particular subject of science) and to find a solution. At the same time, specific diagnostic, design, and modeling of research activities will be carried out in stages. "

It is advisable to develop a dialectical thinking in the formation of research activities in students. The term dialectics has been used in the past in three ways: firstly, as a means of discovering the contradictions in the minds of the interlocutors and arguing over the truth through debate; secondly, as a form of thinking that incorporates the principles of philosophical thinking; Thirdly, it has been used in philosophical and other sciences as a method for the comprehensive understanding of things and events in the process of research [17].

1. Communicative competence is the ability to interact in the native language and in any foreign language in social situations, to develop a culture of communication, social adaptation, and the ability to work effectively in a team.

2. Information competence - such as the ability to search, sort, process, store, use, secure, and develop a media culture.

3. Self-development competence - Continuous self-improvement of physical, spiritual, spiritual, intellectual and creative development, aspiration for perfection, independent learning throughout life, cognitive skills and life experience ,the ability to evaluate and make independent decisions.

4. Socially active civic competence is the ability to feel and be involved in events, events and processes in society, to be able to know their civil duties and rights, to respect their work and civil relationships, and to have a legal culture.

5. National and cultural competence - commitment to homeland, compassion for people and belief in human and national values, the ability to understand artistic and artistic works, to dress modestly, to adhere to cultural rules and healthy lifestyles.

6. Competence and awareness of mathematical literacy, science and technology innovation - ability to make personal, family, professional and economic plans based on accurate calculations, read various diagrams, diagrams and models in daily activities, facilitates of human labor, and increases productivity. And develops the ability to access science and technology that is conducive to favorable conditions. These competencies are formed by students through general education subjects.

"In the Republic of Uzbekistan, based on the constanty, continuity of education, the priority of the student's personality and interests, the basic competences are formed based on their age. The underlying competencies can be explained as schematic (Figure 1).

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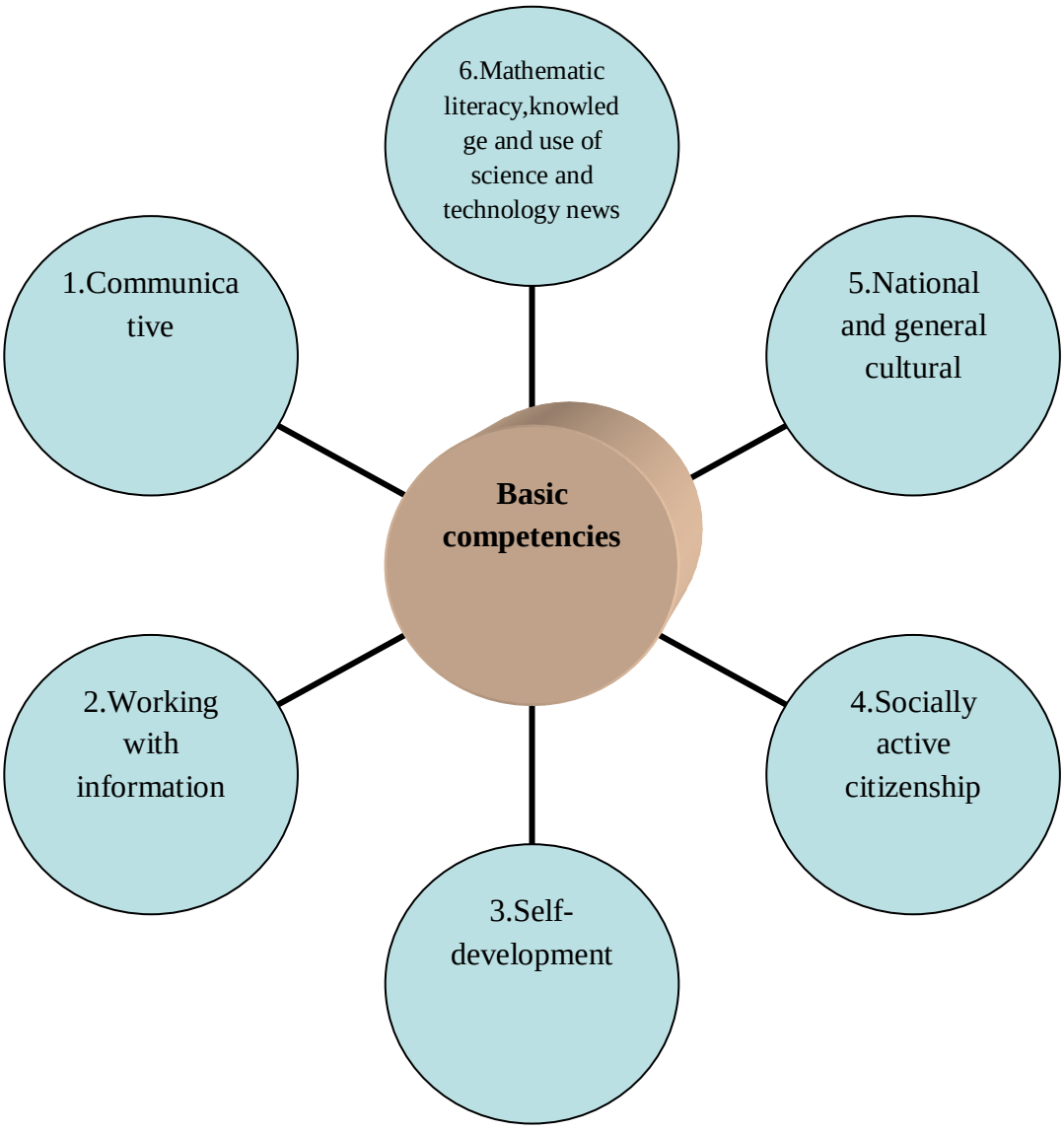

Figure 1. Basic competencies

Success in education depends not only on the content of the learning materials, but also on the learning process, and in many ways on how the student learns, that is, the psychological bases of acquiring skills in accordance with the learner's age, mental development and activity.
Characteristics of the formation of students' research skills based on their basic competencies are as follows:

- motivation;
- creativity;
- superiority of logical thinking;
- ability to search;
- novelty of novelty;
- high level of analytical thinking;
- high synthetic thinking ability;

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- high level of knowledge;
- strength of research skills.

It can be further added to the peculiarities of shaping students' research work. Because they evolve over time

We will analyze the importance of competence in using mathematical literacy, knowledge and innovation in science and technology in developing students' research skills:

It is well known that the process of primary school education is the debut of general secondary education. That is why, in our country, great attention is paid to improving the quality of primary education. Each educational institution has an interesting educational and methodical literature for elementary school students, including electronic resources.

It is more effective to organize classes using multimedia materials than traditional methods. As a result, students develop their thinking abilities; they can be seen and heard at the same time; learners learn more; increases the effectiveness of the lesson; computer literacy of primary school students is formed; the ability to display didactic material through animations to avoid tiring lessons; they can be displayed or shown again in small clips.

Learners' competence in using and comprehending mathematical literacy, science and technology refers : being able to create and maintain personal, family, professional and economic plans based on accurate information, to read and use various formulas, models, diagrams, graphs and diagrams in daily activities, and being aware and having access to the latest science and technology innovations that facilitate the work of the person, creating favorable conditions and increasing labor productivity.

In improving the quality of education, it is important that a teacher-educator has the professional competence and education, knowledge of interactive teaching methods.

Summarizing the above points, we present the content of the students' research skills in the following figure (Figure 2):

IMPROVEMENT OF RESEARCH CLASSES		
During the lesson - use of information technology, creative and problem-based organization of interactive methods	**Extracurricular Process** - School of Young Researchers, Knowledge Contests, Science Clubs and other associations	**Additional Forms** - Science Practices. Traveling. Centers of innovation

MAIN METHODS FOR RESEARCHING SKILLS				
Resources (textbooks, works, newspapers, magazines, internet information, etc.)	Audio and visual representations (computer, mobile, voice recorder, video projector, TV, video camera, multimedia equipment, etc.).	Media (magazines, collections, newspapers, radio and television materials, etc.)	Information and Communication Technologies (Internet).	Specially prepared questionnaires and tests

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CONTENTS OF RESEARCHING EXAMINATIONS					
Choosing a current science problem	Justification of research topic	To study the current state of the research process	Implementation of special problem-solving methodologies in the research process	Determining the effectiveness of the research results on the basis of pilot studies.	Develop appropriate and conclusions recommendations on the study
RESULTS: **Students have developed research skills**					

Figure 2. The essence of the formation of research skills in students

We need to find a solution to a number of urgent problems to improve the competence-based approach to education. These are:

- step-by-step implementation of competence-based curricula;
- organization of training seminars and training courses to integrate the state educational standards and curricula into the content of textbooks and manuals based on competence-based approach;
- improvement of professional competence of teachers-educators according to the requirements of the state educational standards and curricula based on the competence-based approach, ensuring their learning of modern psychology, personal psychology;
- creation of conditions for use of multimedia applications of textbooks and methodologies for teachers on the basis of advanced pedagogical and information-communication technologies;
- delivering the results of the effective work by organizing training seminars for teachers in all secondary schools.

A decent approach in the learning process is aligned with the basic competencies, forms the output and effectiveness of education. The modular learning process forms the direction of individual learning for students and forms a fully oriented research process. In this case, changes will increase the depth of knowledge, change the method of learning, increase the desire for learning, change the form of competence and being able to apply what they have learned under unusual and unfavorable conditions.

Below we have done another research project on another small topic in this lesson. Here's a step by step process:

I. The initial stage.

1. The theme "The history of the land of Samarkand - in fairy tales and legends" was chosen. The aim of the project was to study the history of the land of Samarkand on the basis of myths. The result of the project was the creation of small texts on the history and nature of Samarkand's land.
2. The number of project participants and the composition of the groups were determined.
3. The initial cognitive cross section of the textbook compiled by the teacher was conducted.
4. The entry form has been completed (I know what I want to learn).

II. The plan development stage.

1. The tasks of the stage were: collecting material, translating this collected material into fairy tales and legends, and finally giving color.

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2. The methods of data collection and analysis are as follows:
- Reading a popular text;
- Highlighting the key words;
- Using synonyms, metaphors and aphorisms to help change the language and style of the text;
- A story plan has been drawn up.
3. The sources of information are:
- A list of books compiled by a teacher, or books that students find in a library;
- The Internet.
4. The sources and methods for collecting information are as follows:
- Independent study of the found information;
- Discussing the reading together;
- Using expert advice.
5. Project quality criteria and methods were discussed:
- The amount of material studied;
- The independence of thinking;
- Short, vivid and clear speech;
-Proportionality of text and illustrative material;
-Base quality;
-The originality of the presentation.
6. The results of the presentation form were made into a book of fairy tales and legends.
7. The form of work (individual, group) is defined, tasks are defined:
- Collection and processing of primary information;
- Telling the collected information in the language of fairy tales and legends;
- Painting;
- Book drafting.
8. Definition of project implementation deadline.

III. Realization of the project.

1.We started collecting and analyzing information from a variety of sources on the basis of a previous project.

2. We have been recording, processing, copying the information we receive. We worked on the pictures for the information.

It should be noted that during the course of the project students learned to work with information and communication technologies. They have created and formatted documents in MS Word, have been trained to collect, analyze, systematize information from the Internet, create presentations, and work with graphics, animations, and MS Power Point software.

3. We analyzed the received materials. We conclude that there is very little information about our native land and its history, so we tried to tell our fairy tales and legends of our home city through fairy tales and legends.

4. The final knowledge on the research topic was summarized and the results were analyzed.

5. Presentation materials were formed.

6. Before the performance, we had an interview with a school psychologist.

IV. The final stage.

1. The project was debated among the students.

2. The project was evaluated based on the set criteria.

3. Different criteria were discussed on the process and outcome of the work, that is, teams and personal success.

4. Exit poll was completed.

5. Pupils received research skills in the work done. They say, "What have I learned?", "What have I achieved?", "What have I done?", "What could I have done before, now I can do?", "Whom I helped?".And they answered.

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6. Students gave open lectures, activities at science month meetings, answered questions, defended their views, opinions, ideas and conclusions.

Undoubtedly, such large-scale project work requires strong training of the teacher and involvement of specialists in various disciplines, but as a result, students 'desire to learn, collaborative learning of different disciplines, knowledge and skills of students, formation of students' critical thinking, they are shaping research and so on.

The students were so interested in this research that they were not satisfied with the work they were doing and started the next project and the next book. On the basis of fairy tales and legends, the discussion of the peculiarities of the life and activities of the historical figures and customs of the Samarkand region began. In addition to natural science knowledge, information about music and information technology was also included. During the study of the history of Samarkand, the students collected national songs, and also experimented with ceramics and other forms of carpenter. The knowledge and skills learned in the course of the research project left a lasting impression not only in the mind but also in the hearts of the students, as well as in the students' thinking, and the acquired knowledge was put into practice.

Creating a learning process for students to think independently requires a long-standing stereotype in the learning process - the changing role of the teacher, and a new, creative approach to the organization of the learning process.

Storytelling, interviews, problem-solving exercises, task assignments, educational games, educational discussions, stimulating and rebutting the learning process, problem teaching, problem-solving, research, inductive and deductive discussions, methods such as working independently with the book, verbal survey, writing, creative, programmed learning, and independent surveillance will be helpful in developing research skills. But today, not only a mature, that is educated specialist, but also a person with a healthy spirituality demands the formation of a perfect human being. For this purpose, it is necessary to define the ways in which teachers can bring up a perfect person, to provide them with the necessary teaching materials for this purpose.

In elementary education, it is required that the “discovery” of new knowledge and ethical qualities is carried out by the teacher, not by the teacher, but also by the students themselves. In the course of teaching, the teacher should be based on the core competencies such as being able to express his or her thoughts in a verbal and written manner, logically answering and answering questions based on the topic, and being able to defend his position while respecting the views of the interlocutor. Such discoveries come from lively conversations between teachers and students as well as literary research conversations while working on text or short stories.

The method of comparison and contrast is also used extensively in the development of new concepts. The method of comparing newly acquired knowledge with previous ones, in turn, is a form of self-study of new concepts. The method of comparison is based on the students' aspiration to challenge their logical arguments with their classmates' arguments and ideas.

The method of comparing themes should be used in different situations and conditions. Comparing the difficult topics requires even the most talented student to have a great intellectual capacity. Asking such a question or matter by the teacher, making hypotheses, proving the correctness of one of them is based on a conflict of ideas, reinforced by an independent activity.

Inductive and deductive methods of teaching also play a role in teaching students to think independently. When Yu.Babansky uses inductive method, there are two aspects to teacher and pupil activity: firstly, the teacher cites facts, demonstrates experience, exhibit material, organizes assignments, helps students to identify concepts, understand laws, and generalize ideas. Students learn the facts and then draw general conclusions about the nature of the study. Secondly, the teacher poses problematic issues that lead to general conclusions that lead to particular situations from a personal perspective. Students independently reason on the evidence and draw conclusions [6].

In today's independent creative education, the first aspect of the method of induction is not quite true as long as it encourages research and free activity to promote the spiritual maturity of the student. The second aspect is that the teacher poses problematic issues that lead from private to general, leading to

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general conclusions, and that students are more likely to independently reflect, draw conclusions and generalize.

Currently used in continuous education “Brainstorming”, “Everyone teaches everyone”, “Working in small groups”, “I know. I want to know. Some of the techniques, such as "I learned", "6x6x6", "Cluster", "Genealogy", can also be used in the analysis of fiction work in the process of independent creative learning. In fact, the difference between these methods and the logical methods in education is insignificant.

Interactive methods aim to achieve high results in a short period of time without excessive emotional and physical effort from the student-teacher. Delivery of theoretical knowledge to the learner within a short period of time, skills and competencies in a particular activity, as well as their monitoring and evaluation, require the teacher to be highly professional and agile.

“6x6x6”is another technique that can be used in independent creative learning. When using this method for working on small texts, the teacher is required to be able to form groups and pedagogical skills and attentiveness. In this method, students in the class are divided into six groups of six. There are 36 students in total. Groups are given specific names. The theme of the lesson will be announced and a specific time will be determined. Pupils debate about the topic, express their attitude. At the end of the assigned time on the topic, the teacher will replace the members of the groups. The new group will only have one representative from the previous group, who will report on their topic to the new group. The members of the new group study the opinions and conclusions of the previous group and express their reaction. In this way, students will give feedback on the topic within a short period of time, and these ideas will be analyzed by them.

To form small groups of students:

1. Groups are defined by the teacher.
2. The head of the group and the members are identified.
3. Each group will make every effort to ensure that the students who are mentally and physically capable and who are less able to learn are equally divided. The groups are complemented by members, and their responsibilities are defined.
4. The leader and members of the group are explained their responsibilities.
5. Each group should sit in circles, and each member of the group should see each other.
6. The work of each group is focused on the activities and ideas. Good ideas are encouraged.

Prior to the establishment of such groups: ensuring that students have the necessary knowledge and skills to carry out this work; providing clear guidance to groups; allocating sufficient time to complete the task; to be ready to provide employment to the class who has fulfilled its duties ahead of time; increasing the number of team members in difficult cases; preparing for the impact of the valuation and rewarding process on team members; rewarding strong teams; thinking about how to deliver the results of the work done; you need to create opportunities for the freedom of the community. As you know, mixed groups have more strong students. Children who have average and free upbringing tend to 'cling' to them. Because time is urgent. This means that not all students are actively involved in the lesson. Therefore, it is also possible to classify strong, fast-thinking, fast-paced, well-behaved learners in the classroom individually, good ones, moderate and slow-thinking students, and give each group a task within its capacity. It is well known that children tend to be close to their classmates with the same level of education. They “open up” in their circle. This discovery contributes to the formation of their personality. When assessing group knowledge, emphasis is placed on the difficulty level of the task. The time allotted for each class is the same, but the tasks are different. The fact is that all students succeed in their capacity within a given time frame and seek the victory. It provides spiritual maturity of the person.

Recently, in the practice of independent creative education, such as classes, debates, competitions, scenario lessons, conference lectures, travel lessons, poetry classes, interviews, and analytical classes became popular. Many of these “lessons” can also be called various forms of communication.

Creation of a screenplay on the studied artifacts is also a unique product of creativity. In this process, students also think and act independently. Using a scenario lesson in teaching students to do research is

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an effective way. The “Scenario lesson” method was studied by S.Yaminova as a separate research object.

It is well known that in the independent creative education all these methods are based on artistic analysis of works. It is necessary to ask questions that involve the use of various methods of teaching analysis, which give the students an idea of how to work with them, to make logical judgments, and to only express their own opinions and conclusions.

Achieving a student's ability to think, acquire knowledge and creativity should be one of the main objectives of today's schools.

We use 4th grade natural science lessons to teach students the skills they need to master independently, freely, and to find the knowledge they need on topics such as "I discover the World", "Tree of knowledge", "Working in small groups", "Project", "Doing creative tasks ”, which facilitates the formation of student research and research activity. Directing the learner to research activities should be primarily for the reader, not for science, but for learning the problem should be related to the life experience and interests of the student. To do this, the teacher should not only confine the student with the text of the textbook and the reinforcing questions, but also ask them to ask problematic questions and focus on the development of research activities. In the following, we present our experience of developing a research activity based on students' competences in teaching natural resources in Uzbekistan in the 4th grade textbook (Table 1).

Table 1

Formation of research activity on the basis of the competence of the student in teaching the subject "Natural resources in Uzbekistan"

Choosing a theme, identifying problems	**Setting questions**		**Conduct research**
Natural resources in Uzbekistan	Questions about the textbook. 1.What are natural resources? 2.What are natural resources? 3. Give an example of endless natural resources? 4. What are the inexhaustible natural resources? 5. Why Protect Renewable Natural Resources?	Asking problematic questions. 1. ***Within the framework of socially active citizenship.*** Explain the natural resources in Uzbekistan by the factors of the natural environment. 2. ***Within the competence of self-development.*** How do you think the natural resources are? ***3.Within the framework of the communicative competence*** Natural resources include water and underground resources. Is that so? Or is it an endless treasure? 4. ***Within the framework of the communicative competence*** Solar radiation, plants, animals, wind, air, and water do not end there within the limits of communication competence. Explain your opinion. 5. ***Within the competence of self-development***	Textbooks, complementary resources, and resources related to natural resources from Internet sources are studied. They are systematized. The results are analyzed. Conclusions will be prepared.

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		How can you contribute to the preservation of renewable natural resources? 6. ***Within math literacy,knowledge and use of science and technology news*** Create and analyze the "Tree of Knowledge", which reflects the natural resources of Uzbekistan	

Students work on textbooks, tutorials, Internet resources, e-textbooks to prepare answers to problematic questions, systematize the information they receive, allocate key concepts for the presentation, seek to substantiate the problem, and guide students to research activities.

Access to information resources (internet, television, radio (audio / video recording), telephone, computer, email, etc.) as part of the basic competencies; Observance of media culture in the search, selection, processing, transmission, storage, and use of information required by the media; ability to create, select and analyze databases; The ability to work with documents that appear in daily activities (writing simple greeting cards, filling out questionnaires, registering hotel information, etc.) will be done.

In the process of modernization of continuous education teachers of science lead to independent acquisition of knowledge of students in educational practice. This is the basis for applied research, the development of national and universal values, and the ability to solve problems easily.

Nowadays, it is becoming increasingly important to focus teachers on innovative ways to ensure students' cognitive activity. The use of information and communication technologies by the learner and teacher in the person-centered learning process enhances their mental activity and expands the range of subjects and subject areas.

1.It is well-known that the present and future needs of society and the state, and **the formation of students' skills to work with information**, are in many ways related to information and communication technologies (ICT). It is a means of searching, collecting and employing information, including the delivery and storage of information in conjunction with the Internet. The use of ICT in research helps to improve the quality of research and increases the effectiveness of research. Any pedagogical technology is information technology, because the basis of the technological process of science is obtaining and changing information. When using information and communication technologies for students, it is important to choose research materials that are followed by didactic principles:

- subjectivity,
- problem,
- actuality,
- harmony,
- cognition,
- system approach,
- scientific and other.

The use of information and communication technologies enables students to fully engage in the following cognitive activities:

1. Reliability;
2. Thinking.

The main purpose of the use of ICTs in research activities is to develop students' thinking and to develop ways of thinking activities in them. It will also focus on achieving the following objectives:

- Acquisition of knowledge on the basis of scientific ideas on information, data processes, systems, technologies and models;
- To master the ability to work with various media using computer and other information and communication technologies, to organize research activities and to plan results;

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- Responsible attitude to information, taking into account legal and ethical aspects of information dissemination; selected approach to accepted scientific data.

Advantages of using ICT in research:
1. Individualization of research work;
2. Intensification of research work;
3. Increased volume of completed studies;
4. Expand information flow when using the Internet.
5. Combining research with computer and internet data enables the transfer of part of the research work to the computer, which makes the research process more interesting, diverse and intensive.
6. The use of computer capabilities allows the teacher to clearly indicate the level of learning of the material being studied by all students in a short period of time and correct it in a timely manner. However, it is possible to determine the degree of difficulty of a particular task.
The main purpose of students' use of ICT in research is to develop reasoning, to form prescriptions for intellectual activity. The students use the following methods:

- analysis;
- comparison;
- generalization;
- classification;
- expression of concepts.

Mathematics is a science that develops students' thinking and develops their minds. Particularly interesting, logical, and compelling issues sharpen the reader's thinking. It develops competence in mathematical literacy, awareness and use of science and technology. In particular, based on the logic of carrying out research activities, I.A.Zimnyaya identified three groups of research activities and three related research skills: the first group of activities included intellectual, mental activities: comparison, analysis, synthesis, abstraction, and the complexity of their implementation in complex ideas, systematization, classification, modeling, goal formation, task setting, hypothesis, and so on. In the first research skills group included are as follows: analysis, substantiation and comparison of evidence, separation of significance, goal setting, formulation of research tasks and others. Through these actions and skills, research will be structured, designed, targeted research done, and the problem-solving situation based on independent transfer of knowledge and skills to new situations that require intellectual activity. This aspect of research is incorporated in the author's intellectual research work [11].
Based on this, we have included the following actions related to the informational aspect of research activities: the perception and information content of the research: observation, meaningful perception, review, analytical research. We have also included the following skills: observation, data collection and processing skills, logical understanding of the material, the ability to work with scientific literature and more. This combination of actions and skills helps to reveal the objective content and nature of the subject under investigation.
It is also necessary to clarify the concept of experimental verification. What does it mean? One experiment or experiment? A single experimental agreement is defined as a single experimental experiment with a minimum sequence of motion, with the objects and means of observation sufficient for a one-time test that the hypothesis affirms or rejects. There are hypotheses that they could potentially be rejected, but it is not possible to conduct direct experimental investigations on them. For example, "The shift of the Continents", "The origin of Life", "The causes of the dinosaurs dying" and so on.
Only the hypotheses can be verified if they are a valid hypothesis.
Assignment. Which experiment can empirically confirm the following rule: “nothing is created by artificial or natural operations. In each process there is an invariable amount of matter at the beginning and the last moment of time ”.
1. Can Ptolemy's hypothesis be experienced? (Earth is in the center of the sun and other planets revolve around it).
2. What kind of experiment can be conducted to prove the hypothesis of the effect of noise on human

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fatigue in school settings?

The researcher must put forward a certain hypothesis and have a good understanding of its basic characteristics, otherwise it will remain on the shore of fantasy. One of the main characteristics of the hypothesis is its potential rejection.

From this description, the strongest hypothesis is that the higher the probability of rejection (Q), the higher the probability of rejection. This likelihood depends on how many prohibitions the Protocol (B) contains, but only comparisons can be made with the same observation O tools and dictionaries V.

Further confirmation of the hypothesis is the validation (P), assuming that all experimental D and the number of positive D1 experiments are not equal to O.

In science, simplicity is based on the assumption that: if there are two competing ways to explain an event, a set of facts, and if they explain the facts and events in the same way, then the simplest one is selected. A simpler explanation would be more stable. The hypothesis is known from ancient times. Sometimes, scientists fail to take into account accuracy to simplify expression. For example, D.I. Mendeleev did not take into account the fact that argon has an atomic weight greater than 39.94 potassium, which is 39.09 more than potassium in the periodic system. Similar violations of the law are found in breaches 27 and 28, 52 and 53 and again in four areas of the table.

What is the reason for this or that incident that may not have come as a surprise? The answer to the question Thus, the researcher assumes that what may or may not happen before undertaking the study, while examining the timing and timing of migratory birds, suggests that the researcher's timetable may shift within certain boundaries, which in turn are subject to climate change. However, deviation from these values within the mean value for a given region is not expected or legitimate, and it is also possible to confirm that such a single event (very early or late arrival) violates the law. From the above it has been shown that the empirical hypothesis reflects the essence of the law. For example, the effects of climate on the arrival and departure times of birds, the relationship between current resistance and current strength, etc. The development of the hypothesis begins with the assumption that it will become a "claimant" and gradually move to the "law of nature." Often, such a law is named after a scientist who first pioneered and developed an empirical hypothesis, such as Newton's Law, Om's Law, Archimedes' Law, and so on.

Analysis and results

In order to achieve the common goal of organizing and conducting pedagogical-experimental works, the following was done:

1. To study the current state of research skills formed in students and teachers. Conducting questionnaires among students and teachers of secondary schools, conducting interviews, conversations, monitoring the classroom, pedagogical observation of teachers' activities in the field of extracurricular education, studying and analyzing teachers' views on the state of educational content. Such cases have served as a basis for the successful resolution of this task.

2. Determine the preconditions for developing students' research skills. In the process of solving the problem, the main factors contributing to the formation of student research activities were identified, a development system was established, and the amount and content of knowledge, skills, and competences that should be covered by the students in the state educational standards.

3. To identify problems that arise in the development of research skills in students and to identify measures to address them. This task was implemented through direct communication, dialogue and discussion with students and teachers of secondary schools, organization of activities, exchange of experience.

4. To identify effective educational technologies that will help students to develop research skills. These activities were based on the development of scientific and creative activity in the educational process, the analysis of students' research results, the degree of research activity they developed, and the analysis of student participation in research activities.

5. Development of evaluation criteria that determine the level of development of research skills in students on the basis of basic competences. The criteria were developed in accordance with the components of the research activities proposed in the research.

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The use of this method in the experimental work allowed solving the following pedagogical tasks:
-to determine the purposeful selection of educational content and established methodology aimed at developing students' research skills;
-substantiate the essence of the established methodology, the amount of time it takes for students to develop a knowledge system that helps them develop their research skills, the professionalism of the teacher, and the interconnectedness between students' independent learning and their activities;
-to determine the ability of test tasks to determine basic competences in mathematics, reading, native language, and natural science;
-justification of conformity of the established methodology with existing pedagogical conditions.
This method allowed us to determine the correctness of the scientific hypothesis proposed by us, to study in detail the educational process aimed at developing students' research skills, to collect the most accurate and necessary information, and to provide evidence-based scientific conclusions.
The main requirement for the introduction of the main programs of general secondary education is to constantly improve the learning process and to be constantly open to the news.
Identifying research elements, concepts and ideas that should be based on basic competences in mathematics, natural science, native language, and reading disciplines to address this in the primary education disciplines, for which the state educational standards and curricula, the goals and objectives of the subjects, textbooks should be eligible to the content.
To accomplish this, at the beginning of the school year, tests were made on the relevant academic subjects to determine the baseline competences of students of 49th secondary school in Samarkand were selected for the experiment. The monitoring involved 3-4 grade students. The 207 students participated in the questionnaire.
Results of tests in mathematics, reading, natural sciences and native language at 49th school in Samarkand are presented in the following table (Table 2) and histogram (Figure 3).

Table 2

Test results in mathematics, reading, natural sciences and native language at the 49th school in Samarkand

№	Subject	The 3th grade control,%	The 3th grade experimentation, %	The 4th grade control,%	The 4th grade experimentation, %
1	Mathematics	41,66	42	19,67	35,45
2	Reading comprehension	30	37,09	46,13	48
3	Mother tongue	49,33	48,48	61,56	64,14
4	Natural science	50,65	52,36	65,16	69,12

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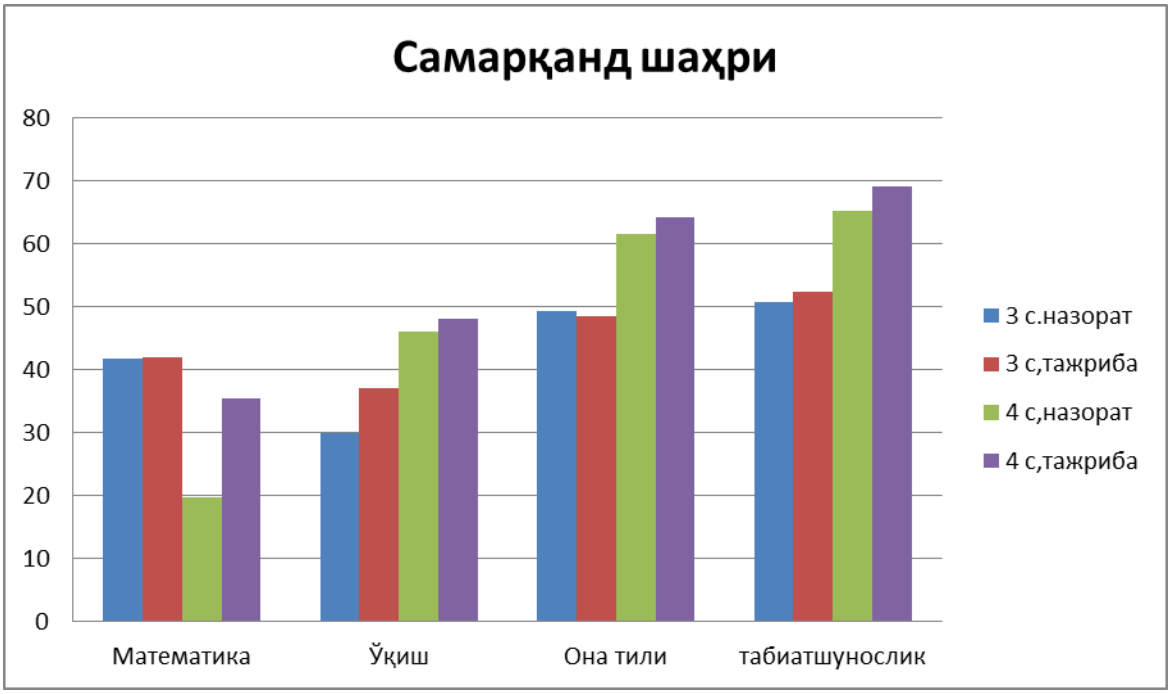

Figure 3. Test results in mathematics, reading, natural sciences and native language at the 49th school in Samarkand

As shown in the chart and histogram, students' readiness to learn mathematics in the subjects is 30.27%; readiness to study is 40.3%, native language is 55.87%, preparation for natural science is 43.69%.
Summing up the statistical analysis, we can say that the training programs used in the pilot groups, the use of the methodological system and the testing methodology are effective, and the experimental analyzes provide the basis for their popularization in the secondary schools of the country.

Conclusion

The study analyzed the formation of students' research activities in secondary and foreign secondary schools. Results need to first teach about secular science, create conditions, opportunities for self-awareness, and then direct them to academic activities to the students of general secondary schools.
Criteria for students to choose the methods of planning and solving problems of research activities *(problem suitability, planning, selection of solutions, decision making, understanding and scientific understanding of the problem)* were developed. If they are used in the learning process to identify the students 'scientific and creative activity, their abilities, interests, and opportunities, and if the right forms of development of the learner are chosen correctly, the students' intellectual abilities will be increased and research skills will be formed.
It is necessary to conduct research on the study of students' activity and their opinion in increasing their activity in research activities and, as a result, to identify new areas in this area.
It is necessary to study and coordinate foreign and national experiences in enhancing student referrals.

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