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SCIENTIFIC AND THEORETICAL BASIS OF DEVELOPMENT OF LEARNING AND PRACTICAL SKILLS OF STUDENTS IN NATURAL SCIENCE EDUCATION

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ABSTRACT

Arousing students' interest in a certain type of activity in the teaching of natural sciences, increasing their internal need to master educational materials, as well as creating conditions for them to acquire practical activity skills, is an effective way to implement this activity. and the development of tools and theoretical foundations is one of the urgent issues waiting for its solution in the field of education. In this article, the scientific and theoretical basis of the development of students' learning and practical activity skills in natural science education of general education schools is highlighted, and the students' learning and practical activity skills opinions, proposals and recommendations on the organization of educational processes aimed at development, approaches to the development of students' practical skills, as well as the types and stages of the development of learning and practical skills.

INTRODUCTION

Currently, special importance is attached to the organization of education aimed at the development of students' learning and practical skills in general education schools. The development of such educational content, in turn, requires professional skills and qualifications of science teachers, as well as in-depth mastering of pedagogical methods that contribute to the development of students as individuals. In addition, in modern educational conditions, it is the need of the hour to educate students and young people who can compete with the youth of the world, have strong knowledge and competence, and independent thinking.

Human activity changes and develops with the development of society. Currently, with the increase of these types of activities and the complexity of their tasks, their practical, social and scientific importance is also increasing. Therefore, activity is a conscious movement of human life as a form of realization of an active attitude towards the existing reality and according to the purpose of this activity. Activity is a specific form and appearance of daily, social or professional actions organized by a person in accordance with natural and social goals [1].

According to psychologists S. L. Rubinshtein, A. A. Leonteva, L. S. Vygotsky, activity is the main condition of psychological characteristics and social formation of a person, which is an important basis of personality development. Therefore, for pedagogy, it is impossible to carry out learning and practical tasks outside of activities [2].

The positive result of educational activity is the change and development of the previous experience of the learners through their social experience.

Based on the activities of learners, if we focus on the content of the concepts of cognitive activity and learning-learning activity, cognitive activity is students' understanding, perception and expression of events and phenomena, connecting thoughts to each other. to distinguish important aspects of events and events, to establish connections between them. And the manifestation of cognitive activity of learners in educational conditions is of special importance as its educational activity.

Educational activity is the activity of acquiring knowledge and methods of action and developing oneself as a person in the process of completing the tasks set by the teacher in the educational process.

One of the main tasks of general education schools is to further develop the skills of learning and practical activities that will allow students to become mature professionals in the future.

Learning activity of students is a combination of activities such as acquiring theoretical knowledge, understanding and conducting practical activities. Students' mastery of learning skills helps them achieve self-development.

According to F.I. Khaidarov, the educational activity of learners is carried out in a process organized as a certain creative communication of empirical and theoretical conditions. Also, they actively influence the cognitive activity of students with the teacher and organize their educational activities and actions related to these activities. Such educational activities are organized and managed by the teacher and are systematically controlled on the basis of reproductive integration. It is known that educational activities are inextricably linked with educational activities. It is brought up by teaching one or another subject and learning activity develops [3].

T.I.Shamova, as a person who manifests himself in his scientific works in relation to the content and process of learning and learning activities, strives to effectively master knowledge and methods of mastering it, mobilizing voluntary efforts to achieve educational goals. emphasizes. Also, the types of activities at each stage of learning and socially effective and socially useful work, creative communication relationships of learners, as well as various practical actions in the educational process, research, experience, solving research problems, etc. learning-knowledge is formed in the activity [4].

It originates from the need for activities aimed at changing students' thinking, worldview and behavior in cooperation with the teacher. In cognitive activity, the student expresses himself, socializes, increases his activity and develops his individual characteristics.

T.I.Shamova in her scientific research singles out the following several requirements for the organization of educational processes aimed at the development of learning and practical skills of students:

- the theoretical knowledge presented to the students is composed of the main practical actions of the students;
- the means of increasing students' activity should be focused on the activity of the algorithm of knowledge acquisition methods;
- each stage of knowledge should be carried out on the basis of a specific goal, affecting the important components of education when choosing means of student activation [4].

The peculiarity of the learning activity of students in general education schools is that in this activity, students understand and think about objective existence. They also have a deep understanding of the essence of science. In learning activities, students not only learn learning materials, but also perform actions such as processing, sorting, and analyzing the acquired knowledge. The more interesting and practical the teaching materials provided by the teacher are, the higher the students' motivation and mastery will be.

According to F.N. Alkarova, today there are two different approaches to developing students' practical skills [5]:

1. Pedagogical approach, in such studies, the main focus is on showing the role of the teacher's activity and didactic tools in the development of students' practical skills.
2. Psychological approach, in which the development of students' practical skills is approached from the point of view of their unique pedagogical and psychological characteristics.

Currently, the development of students' practical skills is considered as the core of the educational process. Therefore, the use of advanced educational tools and methods is required in this process.

Pupils engage in active communication with each other during their learning and practical activities, as well as develop their abilities of perception and thinking, strengthen their social relations, and understand the realities of the environment. In each effective lesson organized by the teacher, this activity develops further, and students try to master the content of the educational material.

Students' interest in learning arises as a result of their successful acquisition of knowledge and it continues to develop. Practical activities are also effectively organized when students acquire learning skills. Therefore, in the organization of students' practical activities, it is necessary to pay attention to the formation of feelings of pleasure and joy in their small achievements.

We have distinguished the following didactic components of pedagogical activities aimed at developing students' learning and practical skills (Table 1).

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Didactic components of pedagogical activities aimed at developing students' learning and practical skills

№	Components	Development resources	Achievable result
1	**Search**	Internet network, scientific and methodical manuals, encyclopedia	Gaining new knowledge
2	**Analytical**	Media education resources, Mass media, educational literature	Development of the ability to analyze, generalize, draw conclusions
3	**Communicative**	Mobile phones, e-mail	Ability to communicate, interactive action
4	**Reflexive**	Questionnaires, tests	Ability to apply acquired knowledge in practical activities
5	**Functional**	Internet network, educational literature, encyclopedia	The development of scientific literacy
6	**Professional**	Internet network, educational literature, encyclopedia	Personal development, self-expression, professional training

The development of each student's activity changes and improves the functional direction of these didactic components.

In the Address of the President of the Republic of Uzbekistan to the Oliy Majlis on December 29, 2020, he said: "The healthy and mature coming of age of the young generation, who will ensure its future, plays a decisive role in the development of society. For this reason, we rely on our young people who are mature in every way, have acquired modern knowledge and skills, and are determined and enterprising to further increase the scope and effectiveness of our reforms [6]". This, in turn, means the need to organize educational processes based on best practices, to create conditions for the development of students' learning and practical skills.

The following types of learning and practical activities of students in general education schools can be distinguished:

1. Learning and practical activities in the nature of oral presentation. According to this activity, students' work with the textbook; familiarization with information; solving problematic issues; performance of collective educational tasks; data summarization, analysis and processing; performing practical training; conducting experiments, small researches; performing laboratory work; implementation of project tasks; searching for new materials through the Internet; preparation of didactic materials; working with dictionaries; performing independent educational tasks; activities such as participation in question-and-answer sessions are carried out.
2. Learning and practical activities in the nature of perception. According to this activity, students observe events and phenomena in the environment; explain them; draw conclusions; analysis of problematic situations; activities such as presenting their opinions based on the acquired knowledge are carried out.

3. Experience-oriented learning and practical activities. According to this activity, students work with issues related to science; work with didactic materials; to put forward one's hypotheses by analyzing the data; exchange of mutual experiences; analysis of results; they carry out activities such as modeling.

The issue of developing students' learning and practical skills is considered relevant for all stages of the education system, and is one of the important didactic tasks in the education of natural sciences. Because, in natural science classes, students get a broad idea of the environment, nature, natural resources, natural processes, events and phenomena, and also conduct experiments related to these, practical training, laboratory work, small research. they do. Such activities help students develop as mature individuals, expand their thinking, creativity and communication skills, personal responsibility and imagination. They will have ways to apply the knowledge they have acquired in natural sciences in unfamiliar and non-standard situations through practical skills.

Based on the analysis of the methods of development of students' learning and practical skills in the teaching of natural sciences, the following directions can be distinguished in this regard:

• ensuring the participation of students as subjects of the educational process;

• organization of educational processes based on democratic principles;

• organization of educational processes based on a person-oriented approach4

• development of educational materials aimed at developing students' learning and practical skills;

• implementation of interdisciplinary integration;

• use of non-traditional teaching methods in order to develop students' learning and practical skills;

• use of advanced educational technologies (design, problem-based education, interactive education, person-oriented education, cooperative education, etc.);

• organization of students' independent work of a creative nature;

• taking into account the individual characteristics of students in the development of learning and practical skills [8].

In general education schools, motivational-targeted, meaningful-active, valuable (axiological)-normative, result-reflexive stages of development of students' learning-knowledge and practical activity skills were distinguished in the education of natural sciences (Table 2).

Stages of development of learning and practical skills of students in teaching natural sciences

№	Steps	Content of stages	Pedagogical opportunities
1	**Motivational-purposeful**	Setting goals, motivating students' learning and practical activities; understanding of educational materials; determining the connection and orientation of internal motives and goals.	Determining the level of development of students' learning and practical activity skills, developing their individual characteristics and improving the content of activities based on the goal.
2	**Content-active**	Comparing the tasks with the needs for the development of learning and practical skills; increase the activity of students as a subject of educational activity.	Students understand themselves as individuals, society as researchers, and moral goals; effectively conduct practical activities based on knowledge.
3	**Valuable (axiological)-normative**	Determining students' attitude to learning and practical activities; emphasizing subject-subject relations; forming a valuable attitude to information; formation of a valuable approach to activity through self-perception of students.	Formation of students' conscious relationship with nature and environment, subjective position towards a certain object; self-development based on the understanding of the connection of the national value system with universal values.
4	**Consequential-reflexive**	Understanding predetermined educational tasks and outcomes; assessment, analysis, identification and correction of deficiencies.	To expand students' reflexive ability and reflexive thinking; creating a healthy environment for learning and practical activities; monitoring the quality of educational activities.

In the content of these stages, attention is paid to the students' ability to see their personal perspectives, increase their motivation for effective organization and mastering of learning and practical activities, while moving them away from traditional thinking.

At the motivational-goal stage, students are given the opportunity to move towards a set goal, and it gives them great pleasure when they achieve a goal that is important to them. Also, positive motivation motivates them to learn and engage in practical activities. The need to become a mature person in the future, to achieve achievements, leads them to struggle to overcome the difficulties they face in their studies and practical activities.

The internal motivation of students is not related to external conditions in their learning and practical activities, but is considered to be related to this activity itself, and the positive result of their actions in practical activities is its own strength. , confidence in one's ability, satisfaction with one's work is expressed.

To increase motivation by optimally integrating theoretical and practical knowledge in the context of the content-active stage, considering the place of theoretical knowledge in practical activity, organizing and systematizing it, and determining the level of students' attitude to learning and practical activity. attention is drawn. Also, this stage envisages the development of pedagogical, psychological, innovative knowledge, skills and abilities of students.

In the context of the valuable (axiological)-normative stage, educating students spiritually and morally in learning and practical activities, making them accept universal human values as carriers of the main national values, making the activity valuable by students' perception of their own activities approach formation is carried out. It also implies the formation of a valuable attitude to the environment, nature, people, one's homeland, and the social environment, which are the values of the society.

In the content of the result-reflexive stage, diagnostic (identification of interrelationships between students), constructive (creating conditions for effective organization of active actions and relationships of participants in learning and practical activities), communicative (o "formation of a cooperative friendly relationship between the teacher and students"), correction (students' activities, actions and feelings in their learning and practical activities are restructured based on the requirements of the general environment review) required to perform tasks. Also, this stage involves the development of students' understanding of the nature of learning and practical activities, self-analysis and evaluation.

Based on the above opinions, it can be said that pedagogical conditions created for students are of great importance in the development of students' learning and practical skills. Based on the study and analysis of the research problem, it was determined that the creation of the

following pedagogical conditions in the education of natural sciences in secondary schools is of great importance in the development of students' learning and practical skills (Fig. 1).

Figure 1. Pedagogical conditions that ensure the development of students' learning and practical skills

These pedagogical conditions ensure that students have deep knowledge and intellectual potential in all aspects. Also, students will have a positive attitude towards learning natural sciences and will have high competence.

It should also be noted that it is important to take into account the following pedagogical possibilities of teachers and students in the development of students' learning and practical skills (see Figure 2).

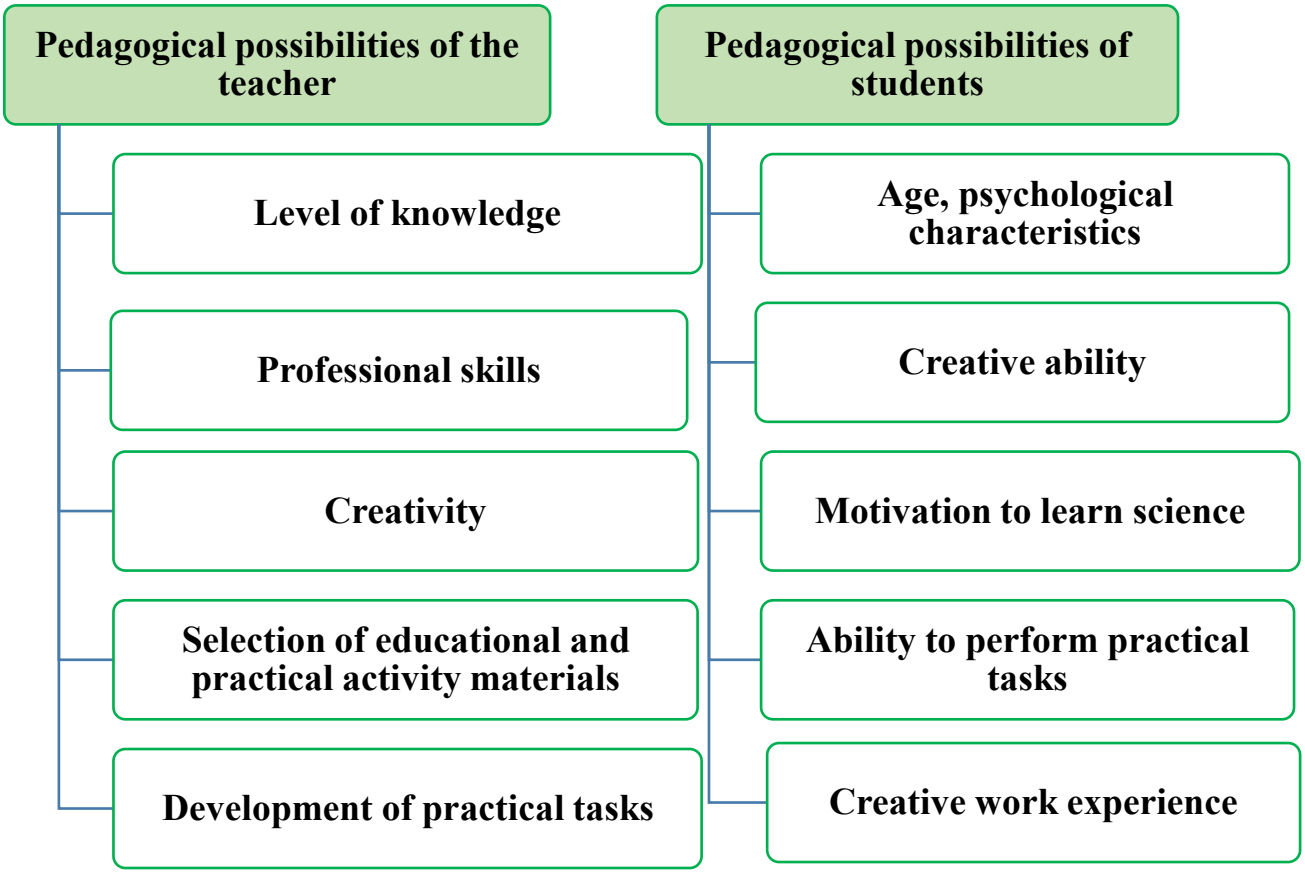

Figure 2. Pedagogical possibilities of teachers and students in the development of learning and practical skills.

It is also necessary to take into account the following psychological factors in the development of students' learning and practical skills:

1) reasons explaining the organization of educational activities (motivation);

2) the voluntariness of the process of emotional reception of information;

3) achieving stability of attention;

4) strengthening memory;

5) development of thinking and speech;

6) willful qualities and personal qualities of students (aspiration, perseverance, striving for a goal, discipline, responsibility, etc.) [7].

In our opinion, the ability of students to be active in learning and practical activities will help them acquire the necessary knowledge and skills quickly and effectively. At this point, it is appropriate to reveal the essence of the concept of "activity" [10].

Systematic organization of the process of development of students' learning and practical skills is the basis for effective and efficient natural science education. It is known from the experience of teachers with high professional skills and students who strive for new things that it is necessary to develop their learning and practical activities by means of various modern forms, types, and innovative technologies of education. appropriate [11].

Also, in the teaching of natural sciences, it is important to effectively organize students' independent work in pedagogical conditions that ensure the development of learning and practical skills [12]. Independent work is considered a necessary element of the educational process, allowing to fill the gaps in students' assimilation of educational information and strengthening of acquired knowledge, to increase students' self-expression and learning motivation. is a type of educational activity [13].

In conclusion, we can say that not all natural science teachers working in secondary schools have experience in effectively organizing students' activities. Most teachers cannot effectively use innovative educational technologies and foreign experiences in the development of students' learning and practical skills. In this process, they cannot determine the pedagogical and psychological problems faced by students (age characteristics, individual capabilities, etc.) based on their professional experience. Therefore, today it is necessary to increase the attention of all teachers of natural sciences to the development of learning and practical skills of students and the use of innovative technologies in this process.

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