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USING INTERACTIVE METHODS IN TEACHING THE SUBJECT OF TECHNOLOGY

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Abstract. This article analyzes the theoretical foundations and practical opportunities of using interactive methods in the process of teaching the subject of Technology in general secondary schools. The author reveals the essence of interactive learning, its differences from traditional teaching, and the specific features of technology lessons. The application of such methods as brainstorming, clustering, insert, case-study, the project method, role-playing games and group work, adapted to the content of the subject, is demonstrated. The research results substantiate that interactive methods are an effective tool for developing students' knowledge, skills and creative thinking.

Keywords: *technology subject, interactive methods, educational technology, student activity, brainstorming, project method, case-study, skill, creative thinking.*

Аннотация. В данной статье анализируются теоретические основы и практические возможности использования интерактивных методов в процессе преподавания предмета «Технология» в общеобразовательных школах. Автор раскрывает сущность интерактивного обучения, его отличия от традиционного, а также особенности уроков технологии. Результаты исследования обосновывают, что интерактивные методы являются эффективным средством развития знаний, умений и творческого мышления учащихся.

Ключевые слова: *предмет технология, интерактивные методы, образовательная технология, активность учащихся, мозговой штурм, метод проектов, кейс-стади, умение, творческое мышление.*

Introduction

In the modern education system, the pressing task is to shape the learner not as an object passively receiving knowledge, but as an active participant in the educational process and an independently thinking individual. In the Republic of Uzbekistan, large-scale reforms are being carried out to improve the system of continuous education and to prepare the younger generation for life in the conditions of a digital economy and technological progress. Within the content of these reforms, the subject of Technology acquires particular importance, because it is precisely this subject that forms in students practical skills, a creative attitude to work, and vocational orientation.

Traditional teaching methods are often based on the presentation of ready-made knowledge by the teacher and do not sufficiently ensure the learner's activity. The subject of Technology, by its very nature, is a practical, activity-oriented discipline, and teaching it requires the direct participation, collaboration and creative exploration of the learner. Therefore, the use of interactive methods in technology lessons is an important factor in increasing the effectiveness of education.

The aim of this article is to elucidate the theoretical foundations of the interactive methods used in teaching the subject of Technology, to analyze their didactic potential, and to demonstrate their practical application using specific lessons as examples.

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Literature review and methodology

The problem of interactive learning has been widely studied in pedagogical science. Among foreign researchers, scholars such as D. Johnson, R. Johnson and E. Holubec developed the theory of cooperative learning. The representatives of the constructivist approach, J. Dewey and L. Vygotsky, put forward the idea of constructing knowledge through the learner's active work. Among national scholars, N. Saidakhmedov, B. Khodjayev, J. Yuldoshev, U. Tulaganov and others have investigated the issues of introducing interactive technologies into the Uzbek education system.

The analysis shows that the concept of an "interactive method" derives from the Latin words "inter" (mutual) and "act" (to act), and denotes teaching methods built on the active interaction and collaboration of learners with one another and with the teacher. In interactive learning, knowledge is not delivered ready-made; rather, it is "discovered" through the learners' joint exploration, discussion and experience.

In the course of the research, the methods of theoretical analysis of scientific and pedagogical literature, generalization, comparative analysis, observation, and pedagogical experiment were used. The study is based on observations conducted at the Nukus State Pedagogical Institute named after Ajiniyaz and in affiliated general education schools.

Results and their discussion

1. The essence and advantages of interactive learning.

Interactive learning rests on three main principles: learner activity, collaboration, and feedback. Whereas in a traditional lesson the teacher is the source of information and the learner is its recipient, in an interactive lesson the teacher performs the role of the organizer and guide of activity (facilitator). Such an approach forms in learners the skills of independent thinking, critical analysis, defending their own point of view, and listening to the opinions of others.

The main differences between traditional and interactive learning are presented comparatively in Table 1.

Table 1. Comparative analysis of traditional and interactive learning

Criterion	Traditional learning	Interactive learning
Teacher's role	Source of information	Organizer of activity (facilitator)
Learner's role	Passive listener	Active participant (subject)
Direction of communication	One-way	Multi-directional, mutual
Source of knowledge	Delivered ready-made	"Discovered" jointly
Learner activity	Low	High

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Criterion	Traditional learning	Interactive learning
Object of assessment	Final result	Process and result

Psychological research confirms that a person retains in memory approximately 20 per cent of the information they hear, 30 per cent of the information they see, and up to 90 per cent of the knowledge obtained through their own activity (Figure 1). The practical nature of the subject of Technology fully corresponds to this principle of "learning through activity".

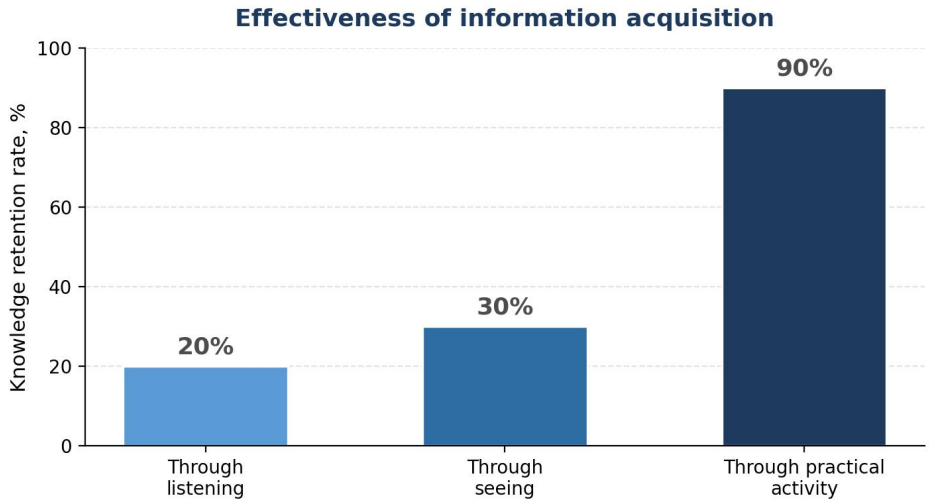


Figure 1. Knowledge retention rate according to the form of information perception

2. Interactive methods used in technology lessons.

Proceeding from the content of the subject of Technology and the age characteristics of learners, the use of the following interactive methods produces effective results. The stage of application and the didactic aim of these methods are summarized in Table 2.

Table 2. Interactive methods used in technology lessons

Method	Stage of application	Didactic aim
Brainstorming	Motivation	Activating ideas, arousing interest
Clustering	Comprehension	Systematizing and linking concepts
Insert	Comprehension	Working consciously with a text
Project method	Comprehension, practice	Creating a practical product, creativity

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Method	Stage of application	Didactic aim
Case-study	Comprehension	Analyzing a problem, making decisions
Role-play	Practice	Vocational orientation and communication
Group work	At every stage	Collaboration and mutual responsibility

The practical application of these methods in a technology lesson is described in detail below.

Brainstorming. This method is used at the beginning of a new topic to activate learners. For example, in the topic "Processing food products", the teacher poses the question: "What methods do you know for preserving products for a long time?". The learners, without criticism, freely express all their ideas. These ideas are then analyzed and systematized.

Clustering. The main concept (for example, "Textile materials") is written in the center, and the concepts branching from it — natural, artificial and synthetic fibers — are drawn out. This method helps learners see the topic as a whole and understand the connections between concepts (Figure 2).

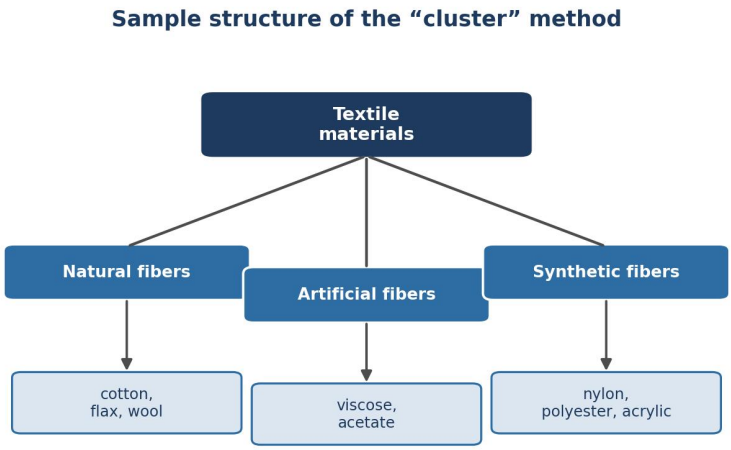


Figure 2. Example of the "cluster" method on the topic "Textile materials"

The insert method. When learners work independently with a text, they use special marks ("v" — I know, "+" — new, "–" — contradicts what I knew, "?" — raises a question). This method ensures the conscious assimilation of theoretical material related to technology.

The project method. This is one of the most effective methods for the subject of Technology. Learners, divided into groups, work on designing, producing and presenting a specific product (for example, a national dish, an embroidered item, a simple mechanism or a model). This process includes the stages of developing an idea, planning, implementation and evaluation of the result. The project method develops in learners entrepreneurship, responsibility and creative thinking.

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Case-study (situational analysis). Learners are presented with a problem situation taken from real life, for example: “Using the materials available at home, how can an item be repaired?”. They analyze the situation, search for alternative solutions and justify the most appropriate one.

Role-play and business games. Learners take on roles such as “designer”, “engineer”, “buyer” and “manufacturer”, modelling a technological process or a situation of selling a product. This method serves to form vocational orientation and communication skills.

Work in small groups. The class is divided into groups of four to five people who carry out a common task. Each member has their own responsibility, which ensures collaboration and mutual accountability.

3. Stages of applying interactive methods and their results.

An interactive lesson is usually organized in three stages: the motivation (challenge) stage — the learners’ existing knowledge is activated; the comprehension stage — new knowledge is acquired through activity; and the reflection stage — the acquired knowledge is generalized and assessed. This structure is shown in Figure 3 and makes it possible to develop the learner’s thinking consistently.

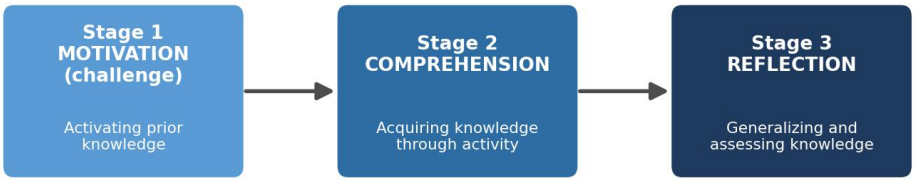


Figure 3. Stages of organizing an interactive lesson

The observations carried out showed that in classes where interactive methods were applied systematically, learners’ interest in the subject noticeably increased, their activity during lessons intensified, and the quality of completing practical tasks improved. Learners acquired the skills of freely expressing their opinion, working in a group, and applying the acquired knowledge in practice. At the same time, it was also established that the use of interactive methods requires from the teacher thorough preparation, the correct allocation of time, and the ability to organize the class.

Conclusion

On the basis of the results of the conducted research, the following conclusions were reached. First, the practical and activity-oriented nature of the subject of Technology creates ample opportunity for applying interactive methods. Second, methods such as brainstorming, clustering, insert, the project method, case-study and role-play show high effectiveness in developing learners’ knowledge, skills and creative thinking. Third, interactive learning ensures the learner’s transformation from a passive listener into an active subject of the educational process.

Therefore, the systematic and purposeful use of interactive methods in teaching the subject of Technology is an important condition for raising the quality of education and for shaping the younger generation as independent, creative and enterprising individuals. In future research, it would be

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appropriate to study the integration of interactive methods with digital learning tools as a promising direction.

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