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## Use of Teaching Technologies in Physics Teaching

Bakhtiyor Qobilov

Senior Lecturer of the Department of Physics, Bukhara State University, Uzbekistan

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**Abstract:** *The article analyzes the technology of project education, which is an important factor in the organization of modern education, bringing education closer to real life, the development of the student's personality, describes the algorithm and stages of implementation of project education technology. Guidelines for the use of project-based learning technology in the teaching of physics are given in the example of the educational project "The effect of electric current on the human body."*

**Key words:** *project education, technology, student project activities, the impact of electricity on the human body*

### Introduction

The main goal of the modern education system is to train competitive personnel whose personal qualities, professional and basic abilities meet the world educational standards, which are of great professional and social importance. Project-based learning technology is one of the main ways to shape the above aspects.

Project education is a model of education in which the teacher has a projected view, searching for a problem, researching and solving it, achieving a specific, unique, personal and socially significant result, presenting it to the public and independent learning activities are organized, which means organizing and planning public evaluation.

### Materials and Methods

Educational design is a specially organized targeted learning activity that allows the teacher to move independently from the search for the problem, planning and organizing activities to solve it, to providing a solution for public evaluation[1].

Generalized design algorithm:

- to promote the idea;
- identify the problem, set goals and express tasks to solve them;
- reasonable choice of convenient methods and means to achieve results;
- planning of joint work and distribution of responsibilities in the project;
- registration of results; make their general presentation;
- self-assessment and reflection.

The structure of the training project is as follows: development of the project concept, planning of project activities, solution of project tasks, product design, reporting, preparation of presentation of results, public presentation, defense and evaluation of the project, reflection, reporting [1-5].

Diversification of educational projects is based on various factors:

- Research, practical-oriented, informative project in a specific field on the leading activities of the project;
- Mono-project in the field of science (within a field of knowledge), interdisciplinary project;
- Short-term, medium-term, long-term project, depending on the duration of the project;
- In small groups and collectively, depending on the number of project participants.

The training project is for informational, informational and research purposes.

The purpose of the training project is to collect information about the state of the problem, its analysis, generalization, coverage and classification of existing methods and tools for solving the problem, interpretation (substantiation) of their advantages and disadvantages.

The results of the project will be in the form of articles, abstracts, reports, cases and other project topics.

Research-based curriculum research is conducted in order to provide a research-based explanation of the problem, substantiate new problems for future development, and develop results-oriented problem-solving methods and tools.

Relevance of project education technology:

- project education allows to solve the following current educational problems and meets the requirements of the time;
- ensures that education is carried out in a situation that is close to real life;
- allows you to combine theoretical knowledge with practical activities and involve students in the process of active independent learning;
- provides formation and development of professional and basic skills.

One of the factors of successful application of pedagogical technologies in the educational process is the ability to predict a specific, integrated educational process, diagnose the level of theoretical and practical knowledge, skills and abilities acquired by students and predict the successful outcome of educational goals. consists of. Based on the theoretical views of the above pedagogical scientists, we present our personal views on the design of the educational process.

The effect of electric current on the human body Curriculum

Pedagogical annotation:

Name of science: "Physics".

Topic: "The effect of electric current on the human body."

Participants: Students of the Medical Institute.

The purpose of the training is to develop skills in the effects of electricity on the human body in order to deepen the knowledge acquired in the course.

Planned Learning Outcomes: Learn about the effects of electricity on the human body. Learn to follow safety rules.

Have the following practical skills in design activities: problem formulation and task definition; selection and use of methods in the implementation of tasks;

Previous knowledge and skills that students need to know to complete a successful project include.

Must know the following prior knowledge: Laws of alternating current, electrical resistance, current strength, voltage, Ohm's law for a part of a chain, electrical parameters of the human body, electric current in liquids and gases.

Must have the following skills: data collection, processing and presentation;

Description of the project on the characteristics of diversity: practical;

Scope of subject and content: interdisciplinary [6-13].

The nature of the coordination of student project activities: the number of direct participants can be from 5 to 8 participants; long-term - until the end of the semester.

The order of implementation of the project: it is carried out in independent activities of students outside the classroom, it is presented in a practical training. The project will take place at the end of the semester, on the day set between the student and the teacher.

- Project evaluation - Project product - Reference (maximum 10 points);
- report (maximum 8 points);
- project presentation (maximum 5 points);
- Oral presentation (maximum 2 points).

Stages of organization of project education.

Preparatory stage: acquaintance with the project; organizing student activities during classroom practice.

Stages of project implementation: during the extracurricular activities.

Final stage: project presentation, project and assessment of students' design activities in the classroom.

Project-based learning management: extracurricular activities.

A brief description of the education model.

The following will be used in the project-based teaching process: teaching methods, design method, work with text and information sources, presentation;

forms of teaching: mass, individual, group;

teaching aids: project assignment, guidelines, computer technology.

Problems:

1. Parameters characterizing the electric current.
2. Electrical properties of the organism.
3. Precautions when using electricity
4. First aid measures in case of electric shock.

The purpose of the project (why it is being created): to acquaint customers using electricity with the rules of technical safety. Outcome of the project (project product); a popular guide for consumers.

Project users: customers who use electricity, teachers, students.

Project scope:

- Completion time: during the semester (presented before the final control), the project parts on the basis of the established schedule;
- Number of participants: group students are divided into 3 working groups, each working group can have from 5 to 8 participants.
- schedule of project structure and terms of their preparation;
- The names of the components of the project characterize the constant current;

Methodical instructions for students to study the parameters of the human body are given in Table 1:

Table 1. Electrical parameters of the human body

№	quantity	Number value
1	Specific resistance, (Ohm m) Muscles Blood Dry skin Bone	1,5 1,8 $3,3 \cdot 10^5$ $2 \cdot 10^6$
2	Dielectric susceptibility Blood Dry Bone	85,5 40-50 6-10
3	Safe for life, (mA)	1
4	Dangerous current for the body, (mA)	100
5	Safe electrical voltage, (V) In a wet room In a dry room	12 36

Table 2. Implementation of the relationship between physics and medicine

Physics topics:	Medical connection
Electric charge. The law of conservation of charge. Electric potential	Biopotentials. ECG. Electromyogram
Constant current laws	The effect of current on the body is the body's electrical resistance

Step-by-step instructions for project activities:

Phase 1. Preparation

- 1.1. Identify the problem, goal and project outcomes, tasks and types of project activities of the participants that need to be addressed during the project activities.
- 1.2. Identify the problem, project goals and outcomes, and the responsibilities of the project participants that need to be addressed during the project activities.
- 1.3. Identify sources of information.

## Phase 2. Project activity planning

- 2.1. Find a way to reach the goal.
- 2.2. Create a work plan:

Distribute among the participants the tasks of project development and its preparation, presentation and reporting.

Determine the time of execution and the type of finished result.

## Project work plan

Participants n.sn.	Task	Job content	Finished product type	Completion time
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## Step 3. Make it happen

- 3.1. Gather the information and format it into text, tables, charts, and comments.
- 3.2. Save the results in the form of informative materials.
- 3.3. Follow the instructions in the report to prepare the report.
- 3.4. Prepare your project for presentation using the Microsoft Power Point preparation guide.
- 3.5. Identify tasks between team members in the project presentation. When preparing for an oral presentation, follow its rules and do not forget the secrets of the oral presentation.

## 2. Instructions for preparing a project report

1. Conclusions proving the implementation of the project you are proposing and recommending (Based on a text of no more than 1 page).
2. Justify the problem you want to solve with (5-6 words).
3. Indicate your project goal: why it was created, what the end result will be, and to whom it is aimed (through 1-3 suggestions).
4. Describe the project objectives (brief and unambiguous).
5. Describe the work plan of the project (according to the schedule).
6. Indicate the results of the solution of the problem and the work done in the project.
7. Form conclusions, confirming the feasibility of the proposed project product.
8. Make a list of sources used for the work done.
9. Rate:

project quality,

The process of working on the project: the effectiveness of the work, the challenges and ways to overcome them.

10. Organize applications: enter questionnaires of project participants and working materials of the project work.

## 3. The rule that applies to the preparation of an oral presentation.

Oral presentation rule What should be in the presentation ?

- Demonstrate understanding of the problem, project goals and objectives; be able to plan and implement work;
- Analysis of the solution process;
- solution found;
- the results of the analysis of success itself and the effectiveness of problem solving.

Also:

adherence to the rules: the general presentation of the group - no less than 7-10 minutes and no more than 15 minutes.

The orderly speech of the members of the group and the coordination of their actions.

Comment on all drawings.

What shouldn't be in the presentation?

Write a detailed description of the project work and retell the content of the project product.

Resistance at participants' speeches.

Unintelligible, vague thoughts.

Evaluation criteria and indicators

The group project will evaluate:

- Project product - Reference (maximum 10 points);
- report (maximum 8 points);
- project presentation (maximum 5 points);
- Oral presentation (maximum 2 points).

### Conclusion

The use of this technology brings education closer to real life, is an important factor in the development of the student's personality, and during the implementation of the project, students also apply theoretical knowledge in practice and interdisciplinary communication.

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