



## TECHNOLOGY TO IMPROVE THE METHODS OF TEACHING PHYSICS IN HIGHER EDUCATION ON THE BASIS OF A COMPETENCY APPROACH (ON THE EXAMPLE OF TRAINING TECHNICAL ENGINEERS)

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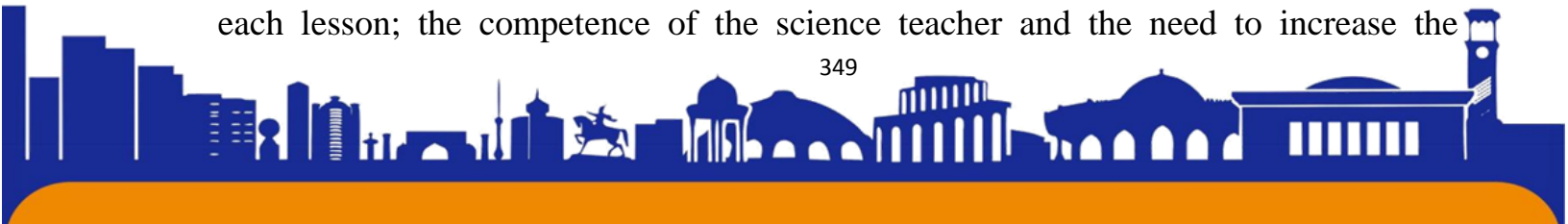
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**Keywords:** competence, competency, innovation, technical, authorship, individuality, thermodynamics, social, national, properties.

**ABSTRACT:** This article develops the following problems and educational technologies related to education including: The unique role of physics in human life in the world, the creation of favorable conditions for the lives of all citizens living in our country in the training of technical personnel in higher education institutions, especially technical universities, practical technological and pedagogical processes, professional self-activation, non-standard solutions technologies form the basis of the article in the development of educational technology development education based on a competency-based approach with special emphasis on the professional component.

**Results and Discussion:** The current level of demand for physics: the technical development of science, the field of production and its role in everyday life, the scientific outlook of students, the ability to think logically, intellectual development, the formation and development of self-awareness, their education and professional activity, the formation of their competencies is determined by their ability to apply the knowledge they have acquired today to tomorrow. The following is an example lesson on the development of basic and general science competencies in students.

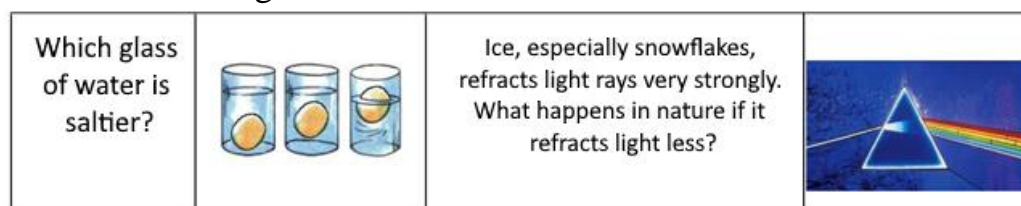
In higher education, the chapter "Fundamentals of Molecular Physics and Thermodynamics" plays an important role in informing students about the fluid and its properties, and first of all, to increase their motivation to study. One of the main requirements for education today is the need for students to develop the ability to apply the knowledge they have acquired in life. In teaching science, 6 basic and 3 general competencies in physics were conditionally selected. These competencies need to be developed in each lesson and as its effective factors: the teacher's creative approach to each lesson; the competence of the science teacher and the need to increase the





motivation of students to study (interest, desire, desire, devotion). Exactly one of these factors is to motivate students to study. The student of today's information age differs sharply from yesterday with his high demands, worldview, and high need for innovation. After all, this period in itself requires the necessary modern requirements, that is, competitiveness in all areas. The upbringing of a competitive person is a standard requirement set by the State. A competent approach to education is carried out by arousing in students the interest, desire, that is, motivation to study, this or that subject. We try to motivate students by creating a problematic situation in the subject of physics in the formation of students' competencies on the topic "Fluid and its properties" and start the topic with simple life questions.

1. Which glass of water is saltier?
2. Ice, especially snowflakes, refracts light rays very strongly. What happens in nature if it refracts light less?





Comment on the pictures provided.

### 1. Formation of communicative competence

On the topic of 'Liquid and its properties', students will be able to express their ideas orally and clearly by listening to the basic properties, physical and chemical properties of liquids, the importance of water in nature and the human body, writing their chemical formula, knowledge of the relationship of physical phenomena to science, the naming of physical terms in other languages and a firm opinion based on their own knowledge, respecting the opinion of others, based on each physical phenomenon, concept and law in different problem situations, based on their knowledge and skills this competence is formed in the student through the ability to make decisions. For example:





<p>Explain what properties of the liquid are shown in the picture.</p>		<p>Which of the given sciences describes the property of a liquid in a given picture?</p>	
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Comment on the pictures provided.

### 2. Formation of competence in working with information.

This competence is formed by studying the topic "Fluids and their properties" by finding, selecting and effective use of sources of fluids, the analysis of the properties of fluids, in particular, the importance of water in human life, its use in everyday life. For example, "There is no mysterious liquid in nature like water. It has only its own characteristics.

- Water has a huge memory that can transmit information throughout the tissue and body.
- About 75% of the earth's surface is covered with water. Due to its high heat capacity, water absorbs most of the heat energy from the sun and protects it from overheating, "and students are given the task to remember and search for new information

Question content	The answer
Is it possible to make a fire with ice?	Yes, if you make a lens out of ice
What percentage of the human body and bones are made up of water?	Up to 70% water is in the body and up to 22% in the bones
Why does a small piece of iron sink into the water, but a huge ship can float on the surface of the water?	Remembering the law of Archimedes, the shape, size of the ship ...

### 3. Formation of self-development competence



To strengthen the topic of "Fluids and their properties", to understand the ratio of surface water and land areas, salt and fresh water basins, rain and snow formation, the amount of fluid in the human body and its exchange process, the ratio of drinking water (water) in winter and summer to be able to substantiate, to form an independent





ISSN (E): 2181-4570 ResearchBib Impact Factor: 6,4 / 2023 SJIF 2024 = 5.073/Volume-2, Issue-2

intellectual approach to problem solving based on life-long learning, knowledge, experience about the importance of fluids in maintaining a healthy lifestyle.

<p>1. What properties does a liquid exhibit in a physical phenomenon in a picture?</p>		<p>2. Explain how the given picture relates to the liquid.</p>	
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Comment on the pictures provided.

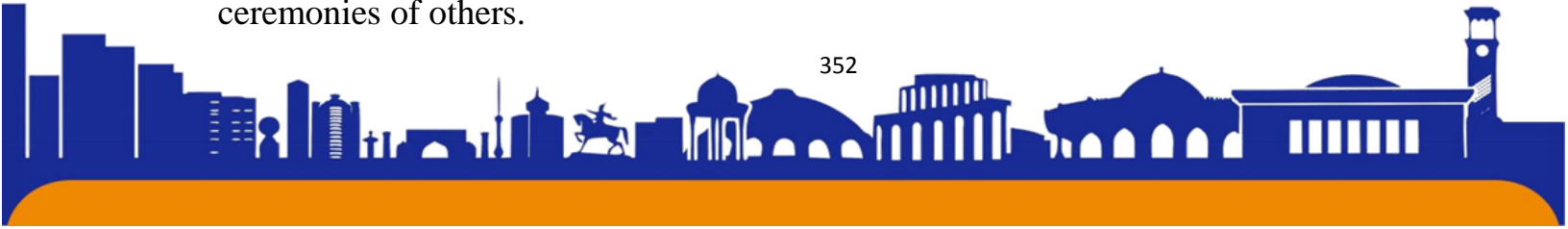
**4. Formation of socially active civic competence**

Sensitivity to global problems related to our country and other countries, in particular, to the solution of problems leading to shortages of drinking water and motor fuels, to avoid excessive water wastage on the street, in higher education and at home, to keep the heat in the winter when using the heating system, this competence is formed by instilling in the minds of students a service to the interests of society, the family, with a good study of the liquid and its properties.

<p>Which chapter and article of the Constitution of the Republic of Uzbekistan contains the following text: Citizens are obliged to treat the environment with care.</p>	<p>Chapter Eleven. Civic duties. Article 50</p>
<p>What sources of drinking water do you know?</p>	<ol style="list-style-type: none"> <li>1. Rain and snow melt water;</li> <li>2. Groundwater (wells, artesian wells)</li> <li>3. Reservoirs (river, lake, ...)</li> </ol>


**5. Formation of national and cultural competence**

In strengthening the theme "Liquid and its properties", this competence is formed in the students by the constant temperature of spring water in winter and summer, its composition, feeding of fish living in the spring of dissolved minerals, in particular, the careful preservation of the rich heritage of our ancestors - the cultural and architectural complex "Chashma" in Nurata and following the rules of etiquette established there, kindness, generosity towards others, respect for the worldview, traditions and ceremonies of others.







2	<p>What physical law was used to bring water to the Oqsaroy, built by Amir Temur in the fourteenth and fifteenth centuries, at a height of 38 meters.</p>	
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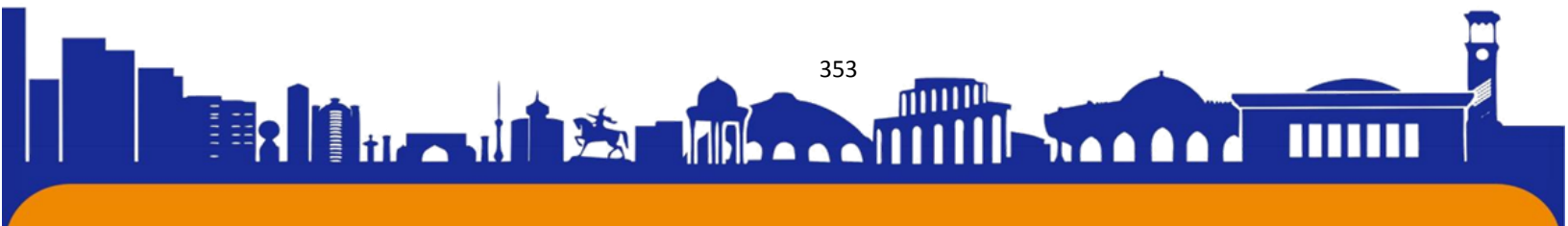
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### 6. Mathematical literacy, the formation of competence

They perform the physical processes that occur in solving problems on the subject and in everyday life, using the necessary formulas, following precise calculations. In doing so, they will have the ability to leave their home at what time they arrive at school without ringing the school bell, and to plan in advance how to dress for school based on weather data. They can also make personal, family and economic plans based on accurate calculations. They are able to use them effectively in life, being aware of the latest scientific and technical innovations that lead to favorable conditions for people

1.	How many grains of rice are on average in one tablespoon? ( $\pm 25$ )	about 1100
2.	What is the name of a device that combines the capabilities of a monitor, processor, keyboard, mouse, and several other devices on a personal computer?	Sensor
3.	There are two 100-liter barrels. One is empty and the other is filled with water. Three different: 9-liter, 6-liter and 3-liter containers are provided. How can these containers be used to distribute 50 liters of water in each barrel?	By no means

measure the required physical quantities using scales, thermometers, psychrometers, calorimeters.





Conduct experiments, measure physical quantities and draw conclusions.

### 1. Be able to use physical tools in practice

The topic "Liquid and its properties" provides knowledge about the temperature of a liquid, its physical size, unit, their scales, which determine the thermal state of a substance, and what instruments are used to measure temperature. At the end of the topic, the practical task is to provide information about the role and importance of fluids in the operation of excavators and cranes, heating buildings. This competence is formed by knowing the scales of thermometers, barometers, manometers,

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