HOW DID THE KILOGRAMS COME ABOUT?

[1]Zulxumor Abdurasilovna Yavkacheva, [2]Andakulova Nigora Nabijon qizi
[1,2]Toshkent State Transport University
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Abstract. *The article reflects on the importance of studying the history of the origin of physical magnitudes in the development of independent and creative thinking skills, their interest, amateurism and creativity in the formation of analytical thinking skills and skills in young people. In the study of physical magnitudes, creativity refers mainly to work from simplicity to perfection. Creativity is associated with the collection, and analysis of information, without which any style of creativity loses its relevance. In the formation of initial skills for working with information in young people, techniques can be used to involve them in the work of collecting, sorting and systematizing pictures of their interests, Popular Science articles, etc. Creative young people test their skills in the field of science. This is central to the development of the Natural Sciences. The creator can make comments on simple physical magnitudes when involving young people in the field of physics. Physical magnitudes are used to characterize physical phenomena quantitatively. The properties of bodies that can be quantified using measurements, or the characteristics of processes, are called physical magnitude. The definition of each physical magnitude allows one to give a way to determine that magnitude or express that magnitude through other magnitudes. Correct and accurate measurement of physical magnitudes is of particular importance in the study of physical phenomena. Physical measurements are made with some accuracy depending on the conditions of the experiment. When we measure a physical magnitude, we get not its true value, but the value that some error has penetrated because the measuring instruments and the sensory organs of the Observer are not perfect enough. But if young people are asked a question about the history of the origin of physical magnitudes, they cannot give a clear answer. For this reason, the history of mass, one of the physical magnitudes, is given in this article. With the concept of mass, students are partially acquainted with their life experiences in the preschool period. But what is the mass itself, how it came about, the reasons for its occurrence and the history of the penetration of the word mass into science will be covered in this article.*

Keywords: *creativity, science, physical size, mass, weight, history, intellectual, lesson, personality, youth.*

Introduction

Our country has done tremendous work towards the construction of a legal, free civil society. Wide opportunities have been created for the development of self–awareness, and spiritual, intellectual, and mental maturation of a person. It is possible to ensure the conscious acquisition of the foundations of science by young people, intellectual-spiritual development, creative thinking, formation as a mature person, and implementation with the help of new methods of teaching and teaching technologies. If we look into the past, the roots of Natural Science Research in the history of Uzbekistan go back to the earliest times. In the first millennium BC, in the developed historical and cultural centres of Agriculture on the territory of Uzbekistan, calendars were developed that determined the deadlines for the implementation of agricultural work based on in-depth knowledge of the laws of movement of The Sun, Moon and planets. The rapid development of Natural Sciences in Uzbekistan took place in the Middle Ages. The great

thinkers of the medieval period, Muhammad al-Khwarazmiy, Ahmad Farghani, Abu Raykhan Beruniy, especially Mirzo Ulugbek's outstanding contribution to the development of mathematics and astronomy, are recognized by the world community. Having studied and concluded the work carried out by our historical scientists, the issue of activating the educational and cognitive activity of young people is among the important tasks of the educational process. This is especially noticeable at the moment when technological approaches are widely used in the course of the lesson. Rational, correct Organization of the student's cognitive activity and organisation of teaching using modern methods and foreign experiences will not only increase the effectiveness of the lesson but also develop the intellectual potential of young people, and the ability to think freely. In particular, in the development of Natural Sciences, it is important to inform and adapt young people to the scientific innovations covered in rapidly developing information flows.

OBJECT AND METHODOLOGY OF EXPERIENCE

Humanity has been experimenting for a long time using only weight and its units. In the XVII century, scientists concluded that the basic unit of weight should be natural and unchanging. But in an astronomical expedition to South Africa in 1672, John Rishe notices that the pendulum clock brought from Paris is lagging. To correct his gait, the tour came to reduce the length of the pendulum by a few millimetres. John Rishe had discovered that the clock was running fast after returning to Paris. To find out why, the pendulum concluded that the period of oscillation is exactly the square root of the pendulum length, inversely proportional to the square root of the acceleration of the force of gravity.

Over time, Galileo, and Kepler introduced the concept of mass into Newtonian physics, which deeply analyzed the scientific work of Gaugens. In the late 18th century, the concepts of weight and mass and the connections between them were brought to a much more specific state.
On April 5, 1795, the mass of the volume of "clean water", the temperature of which is equal to the melting temperature of ice, was taken as grams, inside a cube with a length of edges equal to one-hundredth of a meter.

Considering the inconvenience of using the selected sample, a temporary mass benchmark was prepared from a metal body of 1 kilogram = 103 grams, which is a thousand times larger than it. Kilograms are derived from the French term – "kilogram".At the same time, it is derived from the combination of the Greek words "thousand" and "gramma", meaning "small weight".

French chemist L. Lefyovr-Jinou and the Italian naturalist J. Fabbroni found that the mass of 1 dm3 (1 litre) of pure water in the maximum density state (at + 4 0 S) is 99.9265% of the mass of the selected temporal Athlone.

In 1960, the International Bureau of Measurements and Scales adopted the following seven basic units: meters, kilograms, mass, seconds, amperes, degrees, and candles. But over time, changes began to be made to the accuracy of the length of the Earth's Meridian, and therefore, in 1872, it was decided to make Etalons from a platinum–iridium alloy for length and mass. The benchmark of the kilogram is a cylinder made of platinum–iridium alloy (90 per cent platinum, 10 per cent Iridium) with a diameter and a height of 39.17 mm. The reason why New Etalons are made of platinum–iridium alloy is the high strength of the alloy and the small coefficient of expansion from heat. International Etalons were prepared in 1889 under the supervision of the International Bureau of Measurements and Scales, based on the decision of the 1875 conference.
1889-, 1948-, 1989-, 2011 to determine whether the mass copies in the years are the same as the étalon, they were compared and the change in the masses of the étalon copies after determining

(an increase of 50 mcg per 100 years in the mass of the copy relative to the mass of the étalon), it was proposed that the general conference on measurements and scales redefine their basic units based on the properties of the fundamental physical magnitudes or atoms created by man.

DISCUSSION AND RESULTS

Having studied the history of the origin of mass, we focus on Newton's laws. Newton's 2 law represents the connection between the mass of a body, the force that characterizes the interaction of two bodies, and the acceleration that the body receives in this interaction. At the same time allows you to reveal the essence of the mass, which is a measure of inertia, representing the inertia property of the body. The concept of mass is important in revealing the essence of gravitational interaction. In explaining gravitational interaction to readers, the following sides are:

that the law of gravity is universal, which is true for all types of matter and area;

to the materiality of the gravitational field;

the fact that the attraction of matter occurs in space and time; that the properties of the interaction of matter, space, and time are interconnected;

that the achievements of Science and technology in the study of outer space are a triumph of the development of human knowledge;

we must pay special attention to the important characteristic of gravitational interaction between objects of gravity and mass.

Gravitation is associated with interaction not only by the gravitational field but also by physical magnitudes such as mass and gravity. In the formulation of the concept of the gravitational field, in many cases, the concepts of the force of gravity with the weight of the body are confused. Therefore, it is advisable to show the sign – differences between mass and weight:

BODY WEIGHT	MASSA
1. The pusher on the support is the force that stretches the suspension, that is, the thread that hangs on the ceiling, the tripod. Modulus is equal to the elastic force produced by the action of the gravitational field. 2. The weight is the vector magnitude. 3. It is variable depending on where the gravitational field is standing. 4. As the Earth moves away from the sphere, the weight of the body goes. 5. The weight of the body is measured on the spring scales.	1. The mass of a body is a measure that characterizes the property of inertia and gravity of matter. 2. Mass is scalar in size. 3. The mass is measured using a Richagli scale. 4. The mass of a body can also be found by comparing the acceleration, and displacement received by bodies. 5. Mass is a fixed magnitude that does not depend on the gravitational field, regardless of where it stands. 6. The mass of any material body in peace will not be equal to zero. 7. Mass-inertia measurement

Depending on the position of the body, its weight may vary. We will be able to see this in the example of scales. The scales will show your weight correctly only if you stand absolutely without moving on its platform. If you bend – scales, the same will note that your weight has decreased when you bend. The muscles that bend the upper part of the body simultaneously pull the lower part of the body up as well and reduce the pressure force exerted on the support. When

you stop bending with the help of muscles that push both parts of the body to the opposite side, on the contrary, the scales indicate a significant increase in weight – the pressure of the lower part of the body on the platform increases. Simply raising your hand should also cause the sensitive scales to vibrate, which is suitable for you to feel your body gain weight. The muscles that lift the armrest on the shoulder and push it down along with the body: the pressure on the platform increases. Stopping our Rising Hand, we move the muscles that pull the shoulder up and strive to bring it closer to the tip of the arm – the weight of the body, which means that the pressure on the platform also decreases. Well, if by weight we understand the pressure on the support, then we will be able to increase or decrease the weight of our own body using the influence of internal forces.

We must also imply the presence of inert and gravitational masses while observing the motion of bodies. Newton, who introduced the term "body mass" to physics, found it good that there were certain difficulties in explaining it. The main reason for this is the presence of two types of mass detection. These are inert and gravitational masses.

INERTMASSA	GRAVITATIONAL MASS
1. The magnitude that characterizes the property of the body to obtain a certain acceleration under the influence of other bodies. 2. Measured by the body's resistance to changing the state of motion. 3. The body is manifested when acceleration is received or slowed down.	1. Determined by the force of attraction to other bodies. 2. Depends on the movement of the body. 3. Is the physical magnitude that gives rise to the gravitational field that carries out the interaction of bodies.

While the mass is defined in two ways, they are equal in large (10-12) accuracy. Thus, the mass of an object is a scalar physical magnitude, a quantitative measure of its inertia and gravitational properties. Mass is a measure of the inertia of an object, or the amount of matter in an object. Such an inert mass is determined by the magnitude of the force required to give it a certain acceleration. However, the measurement of time and distance varies with the change in the relative velocities of the body and the Observer. Consequently, the results of the measurement of the inert mass also change.

Conclusion

In conclusion, in Einstein's theory, energy and mass are not interpreted as different concepts. They are considered to be two different but interconnected aspects of a single process of action. If the ability to perform work appears in this movement, an interaction occurs, and some systems move at the expense of the movement of an initial system, we are talking about energy.

In the 1970s, Kibble scales were used to measure the magnitude of the Planck constant. In 1999, the staff of the National Institute of Standards of the United States-R.Mor and W. Taylor proposed the inverse method, known as the Planck constant, to determine the mass using the Kibble scale. Called the kibble scales in honour of the inventor, this equipment is an electromechanical device that measures mass using electrical power. When the teacher directs young people to independent thinking, and movement, from a psychological point of view, the amount of energy in the human body, energy increases. As a result, the correct choice of a form of education, methods and tools by the teacher, which directs young people to creative search, activity, and free-thinking, will stimulate the formation of interesting, controversial discussions in classes, and creative disputes. It is only in this case that young people take the initiative into their own hands, while the

responsibility of the teacher remains to put their activities in a certain direction, Control general activities, guide them in complex situations, give advice and evaluate their activities. Therefore, innovation is a way of teaching educational technologies, the purpose of which is to facilitate the knowledge given to young people, in which knowledge and skills are formed.

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