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TECHNOLOGY SCIENCE TRAINING INTEGRATION

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Abstract

To improve students' learning experience and increase their ability to solve complex problems, this service aims to integrate technology training with science. Service methods include teacher training in the use of technology in science teaching, creating an integrated curriculum, interdisciplinary workshops and seminars, and collaborative projects between students from various scientific disciplines. Expected outcomes include increasing students' understanding of the relationship between science and technology, developing integrated learning materials, and increasing students' ability to apply technology in a science context. One of the results of this service is improving the quality of education through the use of a comprehensive learning approach, developing students' skills in line with the demands of the future job market, and increasing students' interest in science and technology through interesting learning experiences..

Keywords: integration, technology, science, learning, collaborative

INTRODUCTION

The science of metrology studies the types and methods of measurement. Metrology is the science of measurements, methods and means of ensuring their unity, and ways to achieve the required accuracy. This is one of the most important sciences, because since the existence of humanity, it has been constantly making some measurements. For example: first they measured with fingers or stones, then other measuring tools appeared. Currently, you can find different types of measurements at each step. M: Only the person born is measured, they weigh him, check his temperature and measure his height. We evaluate the temperature outside, keep track of the time and decide how useful and reasonable almost any of our actions are. Human activity in any enterprise is related to measurements. Engineers of industrial enterprises performing metrological support of production should have full knowledge of the capabilities of measuring tools to solve problems of interchangeability of components and control product production throughout its entire life cycle. Metrology has become a science, which cannot be studied without a specialist in any field. Currently, metrology is developing in several directions. If at the beginning of the 20th century, the word metrology was understood as a science, its main task was to describe all types of measurements used in different countries. Now this concept has a much wider scientific and practical meaning, metrology The content acquired the essence.

Man encountered the need for measurements in the early stages of his development in ancient times, when it was necessary to measure distances, areas, volumes, weights and, of course, time in practical life. Measurement is a way of knowing. Science and technology are closely related to development and measurements. Scientific research is accompanied by measurements that allow teaching quantitative relationships and regularities in the characteristics of the studied phenomena. A measurement is a comparison of some value with the same value obtained as a measurement. Mendeleev wrote: "Science begins as soon as they begin to measure. Exact science cannot be imagined without measurements. Measurement of physical quantity is carried out empirically with the help of various measuring instruments: scale, thermometer, length, quantity, area, volume, weight, temperature. The numerical value of the quantity measured during the measurement process. M: Length, weight, and temperature are found in empirically accepted measurement units.

RESULT AND DISSCUSION

The comparison of the desired values and points of the number line is carried out according to the scale (Latin - Ladder). Metrology is the science of measurements and methods of ensuring their unity. With the development of human society and metrology, in particular, the specific concept of measurement was gradually supplemented with the abstract concept of unit of measurement. The first nationwide system of measures appeared a long time ago. At least four thousand years ago, it was in ancient Babylon and Egypt. The experience of Babylon and especially Egypt was adopted by the ancient Roman emperor and Russia and its soldiers, Kievan Rus. Since ancient times, a person has always been a measure of length and weight, how much he can stretch his arm, how much he can lift his shoulders, etc. In the ancient Russians, the system of length measurements included 4 main systems.

There are 3 branches of metrology:

Theoretical metrology is the basis of measurement technology and deals with the study of general measurement issues and the elements that make up measurement. These methods are the results and errors of measurement.

Legal metrology - develops and implements standards and rules for the performance of measurements, defines requirements aimed at achieving the uniformity of measurements, the procedure for the development and testing of measuring instruments, terms and definitions in the field of metrology, units of physical quantities and defines the rules.

Practical metrology covers the issues of practical application of the developments of the theoretical rules of legal metrology. And with its help, metrological assurance of production is carried out.

It is considered the 3 largest and most important branches of metrology, and metrology is divided into branches. That is why the development of these networks is very important for their use in various fields.

Goals and objectives of metrology:

- to create a general theory of measurements;

- formation of the system of units of physical quantities, development and standardization of methods and measurement tools, methods;

- basics of determining the accuracy of measurements, ensuring uniformity of measurements and uniformity of measurement tools;

- creation of benchmarks and standard measuring instruments, checking measurements and measuring instruments;

The process of empirically finding the value of a physical quantity using measuring instruments. There are different types of measurements. The classification of measurement types is based on the nature of the time dependence of the measured value, the type of measurement equation, the conditions that determine the accuracy of the measurement result, and the methods of expressing these results.

Types of measurement

1. Types of measurement according to the nature of the value measured over time:

Static measurements are measurements whose value remains constant over time.

M: Measurement of product dimensions, constant pressure, temperature, etc

A dynamic measurement is a measurement whose value changes over time.

M: Measuring pressure and temperature when gas is compressed in the engine cylinder.

2. According to the method of obtaining the result:

Direct measurements are measurements in which the desired value of a physical quantity is determined directly from experimental data. Direct measurements can be expressed by the formula Q=X, where Q is the desired value of the measured quantity and X is the value obtained directly from the experimental data. M: We can measure current with an ammeter, measure length with a meter, etc.

Indirect measurements are determined on the basis of direct measurement of a quantity that is not a physical quantity itself, but functionally related to it, and then calculated based on certain functional relationships. book is made. The value of the measured value is calculated according to the Formula Q=F(xl,x2 ... xN). Here Q is the desired value of the measured value; F is a certain functional relationship; xl,x2 ... xn are values obtained by direct measurements. M: We can find the resistance of a resistor based on Ohm's law by substituting the current and voltage values obtained from direct measurements. Or the electrical resistance of the conductor is found by its resistance, length and cross-sectional area.

Aggregate measurements are measurements of several homogeneous quantities, based on which the values of the desired quantity are found by solving a system of equations.

M:Measuring the resistance of delta-connected resistors. In this case, the resistance value between the peaks is measured. Based on the results, the resistances of the resistors are determined.

Co-measurement is the simultaneous measurement of several quantities in order to find the relationship between them. In this case, the system of equations is solved. M: Determining the dependence of resistance on temperature, in this case, the dependence is determined after measuring the values.

3. According to the conditions determining the correctness of the result:

It includes measurements of the highest accuracy achievable with the current state of the art and, first of all, reference measurements related to the maximum accuracy of reproduction of defined physical quantity units. It also involves the measurement of physical constants, primarily universals. M:Includes the measurement of the absolute value of the ignition acceleration.

Control and verification measurements, their error should not exceed a certain specified value with a certain probability. In this case, measurements performed by state control laboratories over compliance with the requirements of technical regulations, as well as the state of measuring equipment and factory measurement laboratories, are included. These measurements guarantee the error of the result with a certain probability, not exceeding some predetermined value.

Technical measurements, in which the error of the result is determined by the characteristics of the measuring instruments. Examples of technical measurements are the measurements set in the production process in industrial enterprises, in the service sector, etc.

CONCLUSION

Combining technology training with science can enhance students' learning experiences and their ability to solve complex problems. It is hoped that students will better understand the relationship between technology and science, be better able to apply technology in a science context, and be better able to use technology in a science context through collaborative student projects, interdisciplinary workshops, and teacher training methods. These activities improve the quality of education, improve students' skills to meet the demands of the future job market, and increase students' interest in science and technology.

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