



**THE NEED FOR THE IMPLEMENTATION OF PASCO DIGITAL  
LABORATORIES, WHICH PROVIDES THE POSSIBILITY OF  
DIGITIZATION OF STEAM SCIENCES**

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| <b>ABSTRACT</b>                                                                                                                                                                                                                 | <b>KEYWORDS</b>                                                                                                            |
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| This article talks about the possibility of launching digital laboratories such as PASCO in IT incubation centers of higher education institutions and using them for educational processes, as well as some of its advantages. | STEAM science, PASCO, Higher education, digital laboratory, creative thinking, IT center, STEAM approach, STEAM education. |

**Introduction**

In the digitization of STEAM sciences, it will be advisable to use digitized laboratories of processes or phenomena. Currently, laboratories like this are becoming an integral part of the science and technology of developed countries and becoming one of the most developed health of Talim we can see that the PASCO digital laboratory is being used in the study of chemistry, which is one of the Natural Sciences, for example. This laboratory creates opportunities for the development of creative thinking and the introduction of innovations in creativity.

The launch of IT incubation centers in higher learning institutions provides opportunities to enslave their digital laboratories such as PASCO into educational processes and is the first step in the digitization of STEAM disciplines. There are problems with this, which is felt by the lack of computer programmers of these mummos. The use of the finished state of PASCO laboratories requires the training of teachers to use it as well as the development of instructions for the use of digital laboratories. Ready-made laboratory work developed by the mualifs, such as Storyboard, can be adapted to educational programs. The developed laboratory work is applied practically from the methodological side in explaining educational activities to students. Explaining the images of chemical elements expressed in 3D to students makes it possible to educate students in a wide range of audiences. This can be done as a planned inclusive education on its own branch. PASCO Digital Lab, which requires the integration of this discipline with IT centers if we focus on the content of the related education.

Currently, the presence of IT incubation centers in all higher education institutions makes it possible to solve this problem. We can see that such education is being increased to AML in the countries of China, Japan, Germany, Kariya, Russia, England, where the different educational system of the world has developed.

In implementing this innovation in education through PASCO digital laboratories and educational integration, it became known that it was this integrative educational STEAM approach to Talim that would be necessary. That is why we can see that special attention is paid to STEAM education in countries where engineering is currently developing. The purpose of implementing a new approach to such education is to maximize the knowledge students receive in the training processes, as well as provide opportunities for quality education. The implementation of these visual learning processes can now only be carried out by a few teachers-the reason is that teachers at the same time have a deep knowledge of their subjects, as well as the knowledge of IT areas.

As an important requirement of future education, it will be necessary to introduce this education, which is taking over the world as a new education with a zamanovy STEAM approach in the training of future pedagogical personnel, without delay to the education of our country. The implementation of STEAM training for preschool children, from preschool to students of higher education institutions, taking into account the uniqueness and interdependence of the educational system of our country, will discover universal professionals and universal educators[1].

Implementation of IT fields knowingly integrated training with natural sciences:

First of all, students understand the possibility of digital technologies and will have a digital laboratory to study phenomena and processes.

Secondly, students from digital laboratories use it to independently create problems in different situations and have the opportunity to solve them in different situations as well as in different conditions.

Thirdly at present, the shortcomings in the implementation of Independent Education of students are eliminated, and in addition to training, tugaraks are organized to strengthen various topics covered.

Fourth, the cognitive activity of a laboratory with didactic potential, which is opposed to traditional education, is increased.

Fifth STEAM Science Education provides a combination of Science and it and gains new knowledge. From the sixth, the exchange of ideas between students and the development of creative thinking between them, the improvement of their scientific communication and self-confidence are carried out.

The digitization of modern education shows that technology and production networks embody the existing opportunities in the fields of economics as well as in other areas of various professional activities. It is considered necessary to become an important initiative to develop STEAM education in bringing these opportunities to the Surface[4]. It is also considered cost-effective due to the capabilities of STEAM digital laboratories and the low cost of conducting a quantitative experiment. It is convenient in assessing the knowledge acquired by students, encouraging them, comparing facts, juxtaposing their achieved results, as well as contrasting them. In addition, PASCO digital laboratories, based on STEAM education, in conducting chemical experiments that will be dangerous to human life, are absolutely harmless and are distinguished by the fact that they have their own characteristics. In this case, all experimental commands are carried out by the computer. Another aspect of it is that the causal relationship between the phenomenon observed when the student is difficult to establish is manifested in graphs or special views on the screen. Most often, students learn theoretical knowledge by reading it, but PASCO with the help of digital laboratories, we can say that studying the material guarantees for students the connection of complete theoretical information with practice. It is also considered important that the organization of educational processes with the help of digital laboratories enhances motivation for students to practice independent cognitive actions. It

is considered one of the most effective tools for solving existing problems in production. PASCO's digital laboratories are able to visualize on computer screens representing a direct image of events and processes, without giving students a clear insight into the process or event situations.

Another of the great features of PASCO Digital Labs based on STEAM education is that the lesson is accessible to everyone together is an illustrated view of a process or phenomenon as well as a representation in a sonic state. The fact that the data obtained can be analyzed and recorded creates opportunities for independent education in students and data processing. Such stable digital laboratories teach in most students the use of laboratories in their practice in addition to the motivational process, the direct implementation of any phenomena and processes in the educational process. In increasing student knowledge, critical analysis forms important qualities in science, ranging from specific thinking to general thought processes, the processes of analyzing correct or incorrect information[2].

We can see the possibility of introducing STEAM education for the higher education system through the presence of STEAM subjects in the curriculum. It will be necessary to mention that the importance of this education is the in-depth study of information technology, engineering graphics and other subjects in Mathematics, Physics, Chemistry, Biology, specialties and the demand of the era as a modern approach to increasing the intellectual potential of students. The achievement of STEAM approach education is interdisciplinary integrated education as well as the direct representation of processes through information technology. The application of the STEAM approach in education gives students a number of advantages.

First teaches the application of digital technologies in the implementation of science integration.

Secondly, it increases the possibilities of applying theoretical, scientific, technical knowledge in practice.

Thirdly, it increases the collective activity of students in the educational process.

Fourth develops students skills in critical thinking as well as finding solutions to problems.

Fifth significantly increases your approach to creativity and modern modifications to newly constructed projects.

Sixth increases self-confidence.

Seventh, trains students to make technological innovations.

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