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Methodology Of Using A Virtual Laboratory To Determine The Breaking Indication Of The Environment (Glass)

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ABSTRACT

The article describes the creation and use of virtual laboratory work to determine the refractive index of the medium (glass), the ability of students to observe the process in this virtual laboratory work, the angle of incidence of light, the refractive index of the first medium ideas on how to reinforce the theoretical knowledge gained and qualify, along with the construction of error values on the screen.

KEYWORDS

Virtual laboratory, angle of incidence of light, angle of refraction of light, refractive index of the first medium, refractive index of the second medium, absolute error.

INTRODUCTION

Today, much attention is paid to improving the quality of teaching physics in educational institutions, the introduction of modern teaching methods in the educational process, the selection of talented students, training of competitive professionals in the labor market, development of research and innovation and practical results. At the same time, a number of

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unresolved issues in the field highlight the need to take measures to improve the quality of education and research efficiency in physics. One of them is the implementation of the "virtual laboratory" project in the educational process [1].

Nowadays, the organization of new types of educational processes and virtual laboratory work using information and communication technologies in higher education is of great importance.

The concept of virtual is widely used in the field of informatics and information technology. For example: virtual machine, virtual memory, virtual disk, virtual communication, virtual travel, virtual classroom, etc. Only in this area the concept of virtual is used in different forms and meanings and has different meanings. For example, in multimedia systems, the concept of virtual means virtual being.

The concept of virtual (Latin Virtualis - possible, that is, to occur or can occur under certain conditions) refers to the process by which things and events do not exist in time and space, but the possibility of realization of objective objects or subjective images.

The term “virtual being” was coined in the late 1970s by Jaron Lanier at the Massachusetts Institute of Technology. In 1984, he founded the world’s first virtual being firm. This term refers to the idea of human existence in a computer-generated environment. The term "virtual being" was coined by American cinematographers. They produced a film of the same name about the possibility of artificially realizing imaginary possibilities that could not be realized in a natural way for certain reasons in a graphic form.

Virtual being is something that is practically non-existent, it is impossible to touch it with your hands, to feel its taste and smell. Nevertheless, it exists and man enters this imaginary world and not only observes and experiences it, but also has the ability to influence it, to act independently in this world, to change it [2].

Today, virtual being is used in various fields of human cultural activity. Virtual being is used primarily in the field in which it originated, in science, including physics, in modeling the phenomena of light, the dynamics of liquids and gases, in modeling chemical reactions in chemistry, in geology and geography.

The use of virtual laboratories in the teaching of "Optics" in physics in higher education institutions is expedient, and the author has prepared several virtual laboratories for the department.

One of them is a virtual model of laboratory work "Determination of the refractive index of the medium (glass)." The virtual lab work is prepared in the Visual Basic 6.0 programming language, and when the program is started, the following image will appear on the screen:

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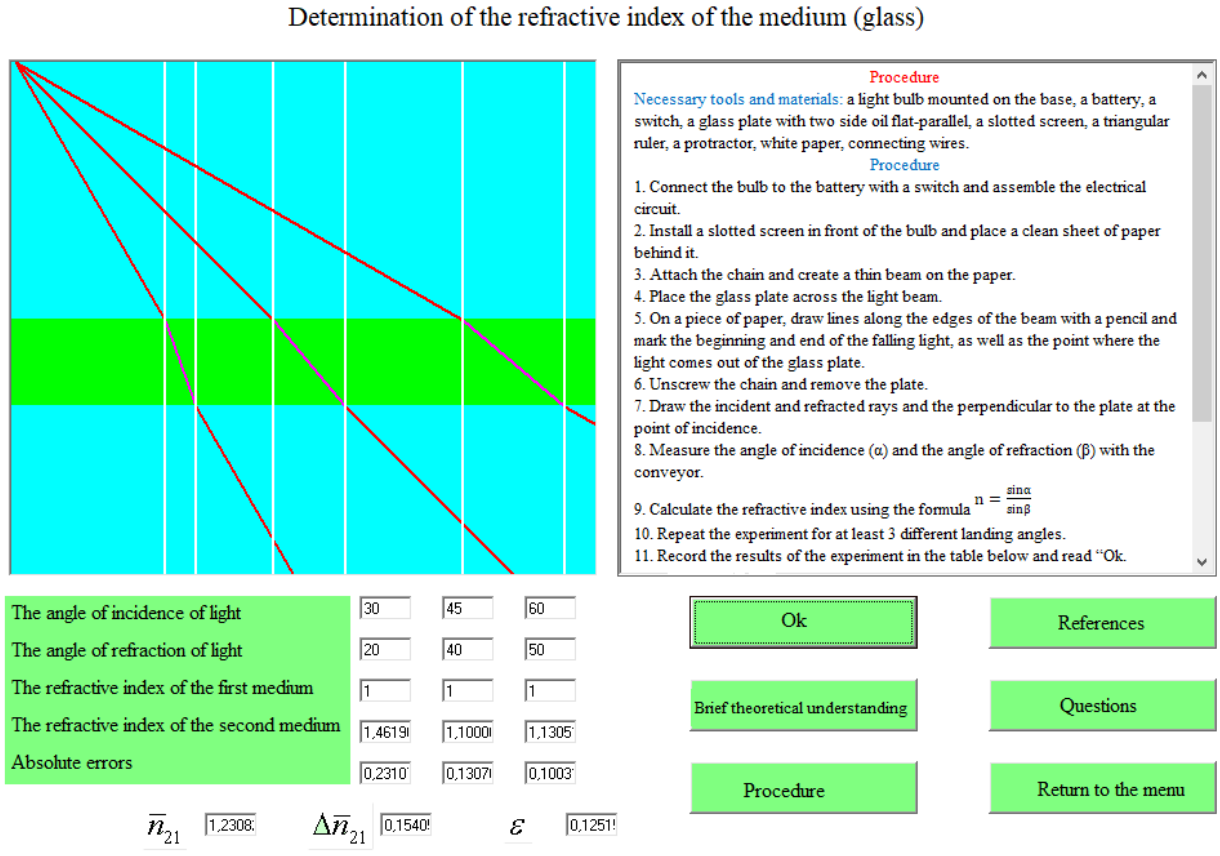

- Main menu
- A brief theoretical understanding
- Work order
- Questions on the topic
- References
- Ok

After the program is launched, the student reads a brief theoretical concept and gets acquainted with the procedure of doing the work. Enter the value of the angle of incidence of the light, the angle of refraction and the refractive index of the first medium, and press the Arrow button. As a result, it is possible to observe the refractive index of the second medium, the values of the absolute error, the average value of the refractive index of the second medium, and the image generated on the screen. The student will be able to enter the desired values at will, and repeatedly observe the result and the resulting image. The student can answer the questions and get acquainted with the list of references by entering the question section on the topic. By clicking on the main menu item, you will be able to see the experiment again from the beginning.

Virtual being is an artificially generated information environment that seeks to replace the environment in the usual way with information generated on the basis of various technical means. We can say that the creation of information visualization tools for the development of virtual reality tools for educational purposes provides a pedagogical effect that can not be achieved with other technical means.

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So, instead of concluding, we can say that it is advisable to use virtual laboratories in cases where students cannot do the work by directly observing certain events and processes in the laboratory. This allows students to make effective use of computer technology, consolidate theoretical knowledge, and have a complete understanding, skills, and abilities about an event. At the same time, it serves to improve the quality of education and research efficiency in physics.

REFERENCES

1. Resolution of the President of the Republic of Uzbekistan. - T .: March 19. 2020. №PQ-5032 "On measures to improve the quality of education and research in the field of physics."
2. M.Fayzieva, D.Sayfurov Educational-methodical complex on the module "Virtual education technology", Tashkent-2016, pp. 41-43.
3. Bent B.Andresen and Katja van den Brink. Multimedia in Education.UNESCO Institute for Information Technologis in Education. 2013. ISBN 978-5-7777-0556-3.
4. Sanjaya Mishra, Ramesh C. Sharma. Interactive multimedia in education and training. ISBN 1-59140-393-6. Published in the United States of America by Idea Group Publishing. 2005.
5. Cerilia Sfk Lanyi. VIRTUAL REALITY AND ENVIRONMENTS.First published April, 2012. Printed in Croatia. Published by InTech. ISBN 978-953-51-0579-4, p.27
6. http://yenka.com