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VIRTUAL TECHNOLOGIES IN TEACHING ON THE WAY OF DEVELOPMENT OF RESPONSIBILITY COMPONENT OF STUDENTS' ACADEMIC INTEGRITY

In connection with the requirements of the times in Ukraine, educational projects are becoming more and more popular not only in educational institutions, but also in large corporations and firms. Examples can be projects on the introduction of distance education, improving the qualifications of company employees, preparing applicants for admission to institutions of higher education, etc.

The prerequisites for the application of the project in pedagogy are precisely its complex nature, i.e. the possibility of covering a wide range of various tasks, actions, etc. with this form of work, as well as the inclusion of various specialists in humanitarian knowledge, the creation of temporary teams to perform the tasks and realize the defined goals, which require coherence and psychological comfort On the basis of such an analysis, the socio-pedagogical project should be considered as an innovative form of organization of the educational environment, which is based on the complex nature of the activity of a temporary team of specialists in the conditions of active interaction with the surrounding environment. This project is aimed at the implementation of a concretely justified goal and a defined final result (changes), a plan of specific actions, limited by a specific period of time and material and financial resources. It is well known that the academic integrity of students is one of the most important components of an educational project.

Nowadays, the laboratory base of scientific and educational institutions is being updated with the use of technical products of world famous companies such as: Siemens, ABB, Moeller, Shneiderelectric . The use of modern devices allows you to create effective laboratory and diagnostic stands for solving the problems of preparing future competitive engineers in the field of automation and for solving the problems of testing of modern technological process control systems. However, laboratories created in this way have disadvantages - low adaptation to the research and lack of methodological support [1].

So, the aim of our paper is to describe the experience of using virtual technology for organizing of the system of laboratory works on course of Practical Circuit Design, which may become a source of relevant data for future researches. The research questions were as follows: to determine the students' attitude towards the use the virtual technology in the course; to observe the changes of students' responsibility of dealing with information as a part of their academic integrity development.

The physics of the phenomena used by the energy sector is rather difficult. As a result, knowledge of engineering disciplines requires students to analyse electromechanical processes and use a specific mathematical apparatus for electrical systems. The practical implementation of electrotechnical devices usually involves sophisticated arrangement, which may include electromechanical converters, power and microelectronics, modern analogue and discrete programmable control systems. It is obvious that technological equipment of this type costs a lot. An alternative method of training is the use of virtual technologies in the engineering staff training. The virtual laboratories equipped with computers have a complete set of measuring instruments, which reduces the cost of learning process [2].

With obvious advantages mentioned, a virtual teaching method also has some dis-advantages, in particular, a sense of due caution to the real object as a source of danger cannot be acquired; students get used to the design and placement of components and do not gain experience in measuring the required physical quantities using real devices. Recently, technological specialties have been unpopular among university entrants. This is due to such reasons as little awareness of the essence of engineering work and its role in under the modern economic conditions; occupational prestige as for technological profile leaves much to be desired; poor career prospects and low remuneration of early career engineers; challenges involved in mastering a study program as for knowledge-intensive specialty; the desire to obtain employment benefits by means of proximity to financial resource distribution centres; higher prospects for the most talented students provided by educational establishments mainly abroad, where the cost of education is approximately the same as in Ukraine.

The consequence is the admission of students mainly with a poor general education and without any professional orientation and career plan. That is, without any motivation to study disciplines on the specialty. In such circumstances, to achieve a positive result, teachers resort to a variety of pedagogical and psychological techniques that would stimulate interest in the subject of study. The following is considered as relevant: one's own practice and examples of real production situations; courses promptly supplemented with advanced information; lessons conducted intensively and emotionally with the audience reaction control; the atmosphere in which emotional satisfaction in the results of the work performed is taken; the method of psychological activation of students' self-ego response.

We should point up that virtual laboratories for electrical engineering students are created by means of different software, namely: VOLTA, MATLAB, Multisim, Modelica and others. The issue that is often discussed and provides the space for experimental activity is the problem of development of such laboratories for the needs of distance of blended learning. This research field is characterized by the numerous experiments and thorough study of strength and weaknesses of such laboratories including study of students' opinion as well as difficulties preventing them from use the educational tools efficiently. The issue of virtual laboratories creation for engineering education is considered by the researchers from different scientific communities worldwide.

The research was based on the formative pedagogical experiment of application of virtual laboratory in the course of Practical Circuit Design. As we were aimed at analysing the students' attitude and responsibility level development, we have not specified the link between students' academic results and their attitude towards the way of their knowledge development. The results of the first research question solving were analysed on the base of students' questionnaires consideration. The questionnaire was provided online using Google forms. The data obtained were followed by the qualitative data obtained during the inclass discussions concerning the students' experience of performing their laboratory works by means of virtual laboratory facilities [3-6].

The results of the second research question solving were considered as based on the data from the questionnaire developed by [7]. It provides the information about the level of responsibility of dealing with information for engineering students. The students were asked

to answer the questions before and after their laboratory works. Their results were compared to observe the level of responsibility change.

Our use of virtual teaching method has shown some disadvantages, in particular, insufficient practice of using real measuring devices for trainees, quite low level of understanding of risks of improper using of real equipment. These problems need urgent solutions, as they affect the quality of students training negatively.

Students' attitude towards using of such methods of teaching for this particular course is positive, which makes good prospective of the development of the methods in modern conditions of blended learning. The students' reflections after the course appeared to be helpful for understanding their ways of personal and professional development.

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