

EXPERIENCE IN TEACHING ENGINEERING DISCIPLINES IN THE LIGHT OF TODAY'S CHALLENGES

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Mobile communications under the current 4G standard, along with the proliferation of smartphones that support this standard, have a significant impact on teaching conditions. On the one hand, students and the faculty get the opportunity to quickly find the right information. On the other hand, social networks, messengers, entertainment resources, available in the auditorium, lead to a decrease in concentration. There is a known problem of "clip thinking" [1], which develops due to the style of network communication. It is further enhanced by switching the attention of the audience to the Internet and back.

Simple arguments suggest possible solutions to the problem: the prohibition of the use of mobile devices; limiting the technical capability of using mobile devices. The first way is called administrative, the second one is technical. There is also a combined path: the ban is intensified by technical means of detecting the use of mobile devices and imposing appropriate penalties.

Many schools have used the administrative way, as evidenced by the implementation of the Procedures for conducting the educational process, backed up by the appropriate organizational and administrative documents. Technical and combined paths are often used in various tests. Without a deep analysis of the economic, environmental and pedagogical effectiveness of such measures, we note that they (measures) can be attributed to prohibited and, in our opinion, counterproductive. Capacity is to create an artificial limited environment for the future specialist, which prevents the ability to acquire the skills to quickly search and apply the necessary information in stress situations [2]. Such measures provide the opportunity to differentiate students by the indicators of their mental works, and not by the indicators of the efficiency of solving professional problems in current state.

Prohibition methods lead to unproductive waste of time for teachers and students. The teacher spends time monitoring the access of students to mobile devices or applies non-legal methods for the temporary alienation of a student's personal property. Students, instead of focusing on finding relevant information and accomplishing their tasks, are forced to scrape information or take steps to avoid the teacher's attention. Such a situation leads to a reduction in the threshold of tolerance to bad methods on the part of the student. In the context of limited time resources and the postulating of academic integrity as a base value, prohibitive methods should be used only on some control measures to assess the student's personal characteristics. Restrictions during lectures, practical or laboratory work are counterproductive.

Instead of prohibitive methods, it is worthwhile to use the opportunities that provide access to the Internet from mobile devices in pedagogical practice. For lecture classes an effective approach is an interactive lecture-colloquium.

The teacher in the process of preparation for the classroom searches for information on issues that need to be addressed at the lecture, using the web search

services and prepares a selection of materials. Presumably, in nowadays conditions, this is a generally accepted approach, which in this paper is called traditional. However, unlike the traditional approach, in preparing an interactive lecture-colloquium, the teacher's job is not only to prepare a compilation of material, but to develop such search queries that are likely to lead to the issuance, on the first page of search results, of references to resources where the information is published, which lecturer assessed as reliable and relevant to modern scientific positions. Search queries should be formulated as subclauses in the topic of the lecture session.

In the beginning of classes the teacher tells the students the electronic addresses for communication and coordinates the technological aspects (passwords for access to the wifi network, availability of mobile internet, search engine and query language, messenger). As the practice of conducting classes shows, all 100% of students as of today have mobile devices at their disposal, which allow them to access and work on the Internet. Therefore, technological constraints (the situation of digital inequality) can be neglected.

During the class, the teacher tells the subclauses to the topic, and students search for information using subpoints as search queries. The purpose of the students is to quickly evaluate the results of the search and create a collection of references or quoting materials in the synopsis. To find materials for each sub-item is given a definite term (5-7 min.) The student creates a synopsis in the form of a text-graphic document locally or in a "cloud" environment. At the end of the class, students send out notes to the teacher's e-mail. If, for some reason, the summary was not able to form during the class, the student forms it during their selfwork and sends it to the teacher, as a rule, until the next lecture session or until the end of the module.

During the course of a student search, the teacher can deliver the material that he found during the preparation for a lecture, to highlight certain peculiarities or nuances from practical experience or specialized scientific publications, etc. If students have questions during the search, they ask their teacher orally or through a messenger and receive answers.

The advantage is that students and teachers find new sources for information that is relevant and up-to-date, students have a self-created abstract and links to topical Internet resources. The teacher can evaluate it as a result of completing the colloquium, thus making the assessment easier because the notes are text in block letters. In addition, the teacher can point students to inconsistencies that occur in online sources, or inadequate relevance, reasonableness of information or its reliability. This is important because students are currently looking for information on the Internet, but for the most part, they can not evaluate its quality, because they do not yet have the appropriate competence.

In the described approach, students use their gadgets in classes to receive professional information and skills for finding and quickly evaluating them. Since gadgets are busy performing tasks, they do not divert students' attention from the classroom, or such a distraction is minimized.

The described approach to lecturing was used on the following disciplines: the Internet technology, innovative technologies of IT creation, the basis of automated designing of construction, which are taught to different specialties. Some students

noticed that they could do such a search independently, without the need for a teacher. However, in the process, such comments disappeared, as students received answers to questions that could not be found on the Internet sources. Also, sometimes there were situations when students found obsolete, distorted or false information.

Conducted at the end of the semester, test has shown that students who took an active part in finding information, formed their own notes on the results of the search during interactive lectures, gave more correct answers to the questions and accordingly received a higher score. Hence, the quality of their knowledge turned out to be higher than that of students for whom traditional lectures were read. In addition, such students have better fulfilled the tasks of practical and laboratory work.

The best results of their work, according to our observations, are due to the fact that students used already prepared theoretical materials, without having to spend time searching for them, or more likely to find relevant information. This allows us to conclude that, in modern terms, interactive lectures, in the described sense, are effective pedagogical methods.

Literature:

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EVALUATION OF THE DURABILITY OF HARD-FACED LAYERS WELDED ON THE CONICAL PICKS ON THE BASIS OF LABORATORY TESTS

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The measurement of the wear rate of tangential-rotary picks (also known as conical picks) is aimed at determining their durability. The measurements have to be made under identical conditions to make sure that the results are reliable, reproducible, and probabilistic. This will allow for the evaluation of the durability of the pick as well as the comparison of different picks. In industrial conditions, the durability of cutting picks is usually defined as a ratio of the number of replaced picks to the volume of extracted material. Most frequently, it is the number of worn picks necessary to obtain 1000 Mg or m³ of extracted material. However, under