

## THE INTERACTIVE TEACHING OF STUDENTS USED AT THE DEPARTMENT OF PEDIATRICS

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### Introduction

The educational process in institutions of higher medical education should be oriented towards the use of modern information technologies [1,2,3, 4, 5]. Among the new technologies in education, since 2012, mass open online courses have spread around the world, such as a combination of free video lectures, interactive tasks and forums for discussing teaching materials [6]. However, only online education is impossible in medicine, and requires practical and clinical experience, working directly in the clinic with patients such as mixed education.

In training medical specialists, it is suggested to use mixed education (blended learning) for example a combination of online learning with traditional teaching [7,8]. One of the innovative pedagogical technologies that can be successfully used in

training in higher medical universities is the flipped classroom technology [9, 10, 11, 12, 13].

### **Aim**

The purpose of this work was to study the effectiveness of using blended learning technology (flipped classroom technology) for improving the teaching of students of the medical faculty at the Pediatrics Department.

### **Materials and methods**

With the purpose of studying the effectiveness of using the blended learning technology (flipped classroom technology) in teaching students in the Department of Pediatrics, an analysis of the assimilation of the material and the long-term preservation of knowledge in studying the topic "Diabetes mellitus in children" was conducted.

The control of the quality of the assimilation materials of the topic and the long-term preservation of knowledge was conducted in 92 students of the medical faculty in 2016-2017 years. An assessment was made of mastering practical skills in working with patients in the endocrinology department of the Zaporizhzhya Regional Children's Clinical Hospital, as well as in the results of solving situational tasks and test tasks directly after studying the topic for 5th year students in the spring semester and after 6 months for the same students with continuation training is already on the 6th course in the fall semester. Students were trained according to the traditional system (45 students, the first group), and using blended learning technology (flipped classroom technology) (47 students, the second group). The students were given a lecture "Diabetes mellitus in children", within the framework of the Educational professional program. The students of the first group used textbooks and educational materials to prepare for classes. Students of the second group used online materials on the university's website in addition to working with educational literature to prepare for the lecture and classes. The online materials for students' self-study included the topic annotation; the glossary, contents of the main conceptual apparatus; a text block of the presentation of the material (a lecture summary) on "Diabetes mellitus in children" with the inclusion of visual diagrams, algorithms,

tables and photographs; short video lectures on the subject; presentations on the topic of the lesson; list of recommended compulsory and additional literature; links to Internet resources (including in different languages).

To assess the quality of mastering the material when working with tests and situational problems, use the coefficient of assimilation, characterizing the degree of error-free activity. The minimum indicator of the coefficient of assimilation assumed an index of 0.7, which indicated a satisfactory assimilation of the material. Values from 0.8 and below 0.9 are good mastery, from 0.9 to 1.0 - excellent assimilation. As a percentage a satisfactory assimilation corresponded of 70-79% of correct answers, good - 80-89%, excellent - from 90% or more as a percentage [14].

### **Results and discussion**

The topic " Diabetes mellitus in children " was studied within the program of the 5th course on Pediatrics. This topic was considered in the context of differential diagnostics, rendering assistance in emergency conditions, the features of therapy and clinical examination in children with diabetes mellitus on the 6th course study.

We found a lower quality of mastering materials intended for self-study when analyzing the assimilation of materials by 5th-year students with traditional preparation for studies at the Department of Pediatrics [15]. This may indicate a lack of self-control, the skills of organizing independent work, and also that this in the future can affect the quality of medical education in general and the professional level of the doctor in the future.

Thus, when analyzing the assimilation of the topic "Diabetes mellitus in children" by students of the 5th year of the medical faculty, following the results of mastering the practical skills of working with patients, solving situational problems and test questions immediately after studying the topic, satisfactory assimilation of the material (values of the assimilation coefficient of 0,70-0,79 was noted in 23 (51%) of students in the first group and in 18 (38,3%) in the second group. A good assimilation (values of the coefficient of 0.80-0.89) was noted in 19 (42,2%) and 25 (53,2%), respectively and excellent assimilation (coefficient values of 0,90 and more) in 2 (4.4%) and 5 (10,6%) of students, respectively. In the second group there were

significantly fewer students with satisfactory knowledge and at the same time significantly more with a good level of knowledge. The proportion of students showing excellent results in training in the second group was slightly higher than in the first group, but without significant differences.

Thus, there was a better assimilation of the topic by students who were trained using online materials in preparation for the lesson by increasing the proportion of students who learned the material to "good" and "excellent" (32 - 68,1% students of second group versus 45 – 55,5% of the first group) form of training.

In the analysis of the safety of knowledge on the topic "Diabetes mellitus in children" after 6 months for the same students who are already at the 6th year of the medical faculty, by the same criteria when assessing the incoming level of knowledge in the class, satisfactory mastering of the material (values of the assimilation factor 0.70 -0.79) was noted in 23 (51%) of the students in the first group and in 18 (38,3%) in the second group. A good assimilation (values of the coefficient of 0.80-0.89) was noted in 19 (42,2%) and 25 (53,2%), respectively and excellent assimilation (coefficient values of 0.90 and more) in 2 (4,4%) and 5 (10,6%) of students, respectively.

According to the results, students of the 6th year of the medical faculty showed lower indicators of good mastery of the material by increasing the proportion of students with a satisfactory level of knowledge in both groups after 6 months studying the topic "Diabetes mellitus in children". However, in the first group of students who training in the classical scheme, this decrease was more pronounced than for students who were trained blended learning technology. In our opinion, this can be explained by more active participation of students in the learning process using online materials and flipped classroom technology [7,9].

The flipped classroom model as a variant of the blended learning model of training allows working more effectively during the practical part with the teacher, as in preparation for the lesson, students were offered to independently understand the basics of the topic using online materials. This allows to shorten the time of analysis of new theoretical material in the lesson, devoting it to discussing the most difficult

questions. Most of the time is devoted to the practical application of knowledge in the course of solving situational problems and to direct work in the clinic at the patient's bedside. Such a model promotes an increase in the motivation of students with different levels of mastering the material.

The proportion of students who mastered the material in the second group was slightly higher than in the first group, when analyzing the quality of assimilation immediately after studying the topic, and after 6 months according to the data of long-term preservation of knowledge, but without significant differences. In our opinion, this is due primarily to higher motivation, the ability to organize independent work for students who consistently demonstrate high performance in training in a medical university.

It is necessary to take into account that different students may initially have different preferential ways of perceiving information - visual, auditory, kinesthetic when organizing the educational process in a medical university [16]. The students of the 5th course retain the prevailing channel of mastering the material in the process of training at the university conditions are created for the development of all ways of obtaining information. Subsequently, in medical activity, sufficient development of all ways of perception is required, which is facilitated by the technique of the flipped classroom to a greater extent than the classical training scheme.

The online material contributes to the flow of information through different channels of perception, unlike the classical preparation for the lesson using a lecture course and textbook. In addition, a competently prepared online course allows the student to better navigate in the necessary and background information, highlight the most important problems of the topic study. This contributes to the formation of clinical thinking, the ability to conduct differential diagnosis.

### **Conclusions.**

1. The blended learning technology (flipped classroom technology) can be successfully applied when teaching students of the 5th year of medical faculty at the department of pediatrics.

2. When we using the blended learning technology (flipped classroom technology) in the teaching of students the quality of mastering the material on the topic is higher. It is especially clearly revealed by the safety of the acquired knowledge 6 months after the completion of the study of the topic. This indicates the effectiveness of using the blended learning technology (flipped classroom technology) in teaching students of the medical faculty at the Department of Pediatrics.

3. The introduction of the blended learning technology (flipped classroom technology) reduces the risks of poor education, raises the requirements for the teacher, makes it necessary to constantly update and improve the materials for online student training in teaching medical students at the department of pediatrics.

### **Використана література**

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