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AN INTEGRATED APPROACH TO SCIENCE MODERNIZATION: METHODS, MODELS AND MULTIDISCIPLINARITY

held on February 19th, 2021 by

NGO European Scientific Platform (Vinnytsia, Ukraine)

LLC International Centre Corporate Management (Vienna, Austria)



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THE MODEL OF «FLIPPED» CLASS

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Summary. Modern realities force us to change approaches to teaching. Thus, educational methods are gradually moving from classical to innovative. And classes are moving from traditional forms to “flipped” ones. In this article, we present an effective “flipped” class model.

Keywords: “flipped” class, model of the lesson, teacher control, active learning, online testing

Classical teaching methods offer us the teacher at the center of the learning process. He is the generator of ideas and the originator of problems. Student involvement in the traditional model may be limited to activities in which students work independently or in small groups on an applied problem developed by the teacher. Class discussions usually focus on the teacher, who is in control of the conversation [1]. However, the teacher leading a traditional lesson sooner or later encounters the problem of “unconsciousness” of the students. Students get used to the templates, samples that the teacher gives them. Sometimes, this can lead to a lack of any analytical activity or even creativity. Independent or individual work is increasingly reduced to copying or filling in templates.

Of course, the educational space should use the traditional lesson structure and classical teaching methods. However, modern realities force teachers to look for more effective methods of working with students. The global pandemic is associated with quarantine measures that are forcing universities, schools and other educational institutions to switch to distance learning. In such conditions, the student's independent work is a key, fundamental layer of his knowledge. However, the student's independent activity and training should be performed according to the tasks and under the methodical guidance and control of the research and pedagogical worker, but without his direct participation.

Therefore, “flipped” lessons are very relevant today. This term is no longer new [2], but has gained the most popularity over the past few years. So, the description of motivation and cognitive load in an inverted classroom [3], how we flipped the medical classroom [4], flipped physics [5], quantitative and qualitative evaluation of transforming to flipped-classroom [6] – all this the actual topics of today's flipped lesson.

What is a type of lesson? A “flipped” classroom is an instructional strategy and

a type of blended learning, which aims to increase student engagement and learning by having students complete readings at their home and work on live problem-solving during class time [7]. In an “flipped” lesson, the focus is on the student and his brain activity. The teacher no longer gives him ready-made answers to his own questions. Students work actively and ask questions themselves, and in the learning process they themselves answer them. Students can conduct data analysis or even entire research at home, and in the classroom only establish certain concepts and goals of the work. Conversely, what students in traditional teaching did at home, they can now do in class. For example, they can watch online lectures and discuss them in class, conduct various creative projects in groups or in the whole class. To plan such lessons, it is necessary to develop methodological materials of different levels and purposes, the so-called didactic support. These materials should provide for the possibility of control by both the student and the teacher.

Such classes form certain positive aspects in the student's life:

- Presence of real motivation
- Curiosity
- Using a systems approach
- Attentiveness
- Hard work, hard overcoming of their own laziness
- Gradual formation of the habit of self-learning
- Positive competitiveness
- Analytical thinking
- Independence

In addition, the inverted lesson is extremely convenient. Conversely, the student chooses a convenient time to study. After all, the main idea of such an approach to classes is the possibility of conducting them on the Internet. In this way, the main elements of the lesson can be viewed online at any convenient time. The model of such a lesson is aimed at obtaining a proper effective education and in-depth knowledge. In this way, the teacher solves another serious problem. Namely, training to obtain a final grade. After all, “flipped” lesson encourages students to understand the material, not just memorize it. So to speak, the student is experiencing the discipline, he (she) is interested and fascinated by it. The knowledge gained in this way remains extremely deep in human memory.

We offer our own model of a “flipped” lesson. This model can be applied to technical, mathematical, natural and even humanitarian disciplines.

1. Basis of your flipped lesson.

An online lecture can form the basis of our inverted lesson. In this lecture, the teacher only outlines the main points and principles of the topic, but does not cover all issues. Such lectures can usually last from 5 to 30 minutes. They are usually recorded. So students can listen to the lecture at any convenient time. The teacher should intend to present the material in such a way that the student can formulate specific questions. That is, it was not the teacher who directly asked the student questions and gave answers to them, but the student himself asked certain questions. This encourages the student to gain deeper knowledge, to show creativity.

0. Preliminary preparation

This stage exists for preliminary preparation of students for the lesson. It can

include different types of assignments that will help expand the topic of the lesson. For example, a teacher may only sketch out a preliminary outline of an online lecture, while a student, in turn, may prepare a short message, a short summary, or a presentation on these theses. This active learning encourages students to think critically.

1. Information tool

By information tool, we mean some supporting materials for obtaining information.

So, after the main lecture, the student has a few questions. However, you must be able to answer them remotely. How? You must provide him with a complete list of trustworthy resources where the student can get answers. It doesn't have to be resources with superficial answers. The student must do some analytical work. However, if the mentor does not provide him with reliable resources, he may find unverified sources. So, the student can make a mistake and remember the wrong information.

2. Task which reinforces interest in the topic of the lesson

After the lecture, the teacher must formulate the task for the student. This task does not have to have a clear framework in terms of the form of presentation of the material or its volume. However, the answer to the assignment must clearly correspond to the content of the assignment and fully disclose it. At the same time, this task should be, as it were, a stimulus for answering the questions formulated after the lecture. So even uninterested students will be forced to delve deeper into the material. Examples of such assignments include:

- Creation of various projects.
- Writing abstracts, messages, articles.
- Creation of presentation and report on it.
- Solving problems of increased complexity.

4. Testing yourself

At each stage of self-study and preparation for the lesson, the student must test himself. He (she) must understand whether he is doing everything correctly, whether he makes mistakes. Usually, this stage is quite difficult to achieve. However, the teacher can use some tricks to complete this step. For example:

- Online testing at the preparation stage.

This testing should not be created to evaluate students by teachers, but to test students themselves. This is an exclusively computerized test, where each question is formulated in such a way as to calculate possible mistakes and problems of students. The teacher creating this type of activity should try to predict all possible difficulties for students.

- Online discussions between students of one group or several groups.

This type of activity does not involve a teacher. However, it helps to improve mutual understanding between students and increase the level of knowledge on the subject.

• Online discussions between students and the teacher. This discussion is not a scheduled seminar required for all students. This is something like a consultation for those in need.

5. Closing the topic. Demonstration of completed tasks

This is the last, but not the last, part of our flipped class model. This part of the lesson can be conducted as a workshop, seminar or conference. It all depends only

on the imagination of the teacher and students.

6. Teacher control

This is the last stage of the lesson. You can choose any type of control, depending on the topic of the lesson, the discipline itself, etc. It may be:

- answer to control or test questions;
- checking the abstract;
- checking abstracts;
- verification of solved problems;
- verification of calculations;
- check of the executed graphic exercises and tasks;
- verification of completed individual tasks

Conclusion. “Flipped” classrooms will provide an opportunity for active learning and student engagement in a variety of hands-on activities such as individual assignments, discussion, debate, workshops, problem solving, and critical thinking. Through the proposed lesson model, the teacher can offer more personalized guidance and interaction with each student. This method helps prevent lacks in the material, provides a better understanding of the subject and, accordingly, higher productivity.

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