TECHNOLOGY FOR IMPLEMENTING INDEPENDENT LEARNING OF STUDENTS BASED ON FLIPPED CLASSROOM TECHNOLOGY

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Abstract

This article examines the theories of students' independent learning and the role and importance of introducing new technologies into lessons in the educational process, the role and importance of "flipped learning" technology in developing students' cognitive skills, the stages of conducting lessons based on flipped technology, and their analysis.

Keywords: knowledge, skills, competence, independent learning, modern education, self-study, development of thinking, flipped learning, formative assessment.

Introduction

The issue of developing students' competencies based on the rapid development of the education system, the use of innovative ideas and integrated technologies in the educational process is currently gaining importance. Important measures are being taken to develop and strengthen the modern material and technical base of educational institutions that meet the development requirements, and to provide them with teaching, laboratory, computer equipment, and information and communication technologies. Flipped Learning (or Flipped Classroom) is a model of organizing the educational process in the reverse order, which changes the traditional teaching procedure. In traditional education, the teacher presents new knowledge in the classroom and assigns homework. In Flipped Learning, students independently study theoretical material at home, and during the lesson they are engaged in practice and problem solving. Unlike traditional teaching methods, Flipped Learning technology involves studying theoretical material at home and applying this knowledge practically during the lesson.

Research Methodology

The rapid growth of technical and technological innovations, news, and information flows in our time is creating the fourth technological revolution in all aspects of life. The interests of the individual and the demands of society are changing. The goal of such demands is to involve the school and the public in ensuring the sustainable development of the world economy and development through education, and to promote scientific literacy and competitiveness. Previously, in labor lessons, girls only learned to sew aprons, boys learned to work with wood and metal, and in fine arts and drawing lessons, they learned to draw pictures and drawings, and draw by hand with a pencil, but now this is no longer enough. Today, schoolchildren around the world are interested in robotics, modeling, construction, programming, 3D design, and many other innovations. Knowledge and skills in this area are formed at school on the basis of technology. It is intended to develop technical creativity, creative abilities, and thinking in students, to further strengthen vocational guidance by teaching methods for processing natural, metallic, and non-metallic materials based on technology during the lesson, and to form the ability to apply the acquired knowledge, skills, and competencies in life in the basics of crafts, the basics of production and household science, electrical engineering, the basics of electronics, creative project preparation technology, and vocational guidance.

In solving this important task, the introduction of pedagogical and information and communication technologies in the educational process raises the issue of developing independent creative activities of students.

Literature Review

In addition to the formation of the intended and standardized knowledge, skills, and competencies in students, the rational use of pedagogical and information technologies in teaching technology is important in order to develop basic and subject-specific competencies in students.

In this regard, in the process of organizing technology classes, the development of competencies in students based on the "Flipped learning" technology plays an important role.

Flipped learning technology has been put into practice since 1993, in which it was proposed to organize the educational process in order to activate cognitive activity

outside the classroom and school. This approach has had a positive impact on the development of education. Flipped learning technology was introduced by E. Mazur. This technology is the use of specially selected programs and information technologies, which allows you to review and complete the lessons in the subjects at home. This approach to education was also used by teachers at Woodland Park High School (Washington) in 2007. In this, students independently master the educational material at a time and in conditions convenient for them, using didactic tools. Practical consolidation of the acquired knowledge and skills is analyzed and reinforced by students in the classroom under the guidance of a teacher.

Flipped Learning Theory: Studies on Flipped Learning show that this technology increases activity among students and encourages independent learning (Bergmann & Sams, 2012). Unlike traditional lessons, this model allows students to actively participate and engage in more practical activities during the lesson.

This technology allows students to master theoretical materials at home, using their personal capabilities, at a time convenient for them. In classroom lessons, the necessary methods are used, rapid changes are made, and difficulties arising during independent work are analyzed.

Independent learning is the process of students mastering knowledge through self-management. Independent learning is important for students to find learning methods that are suitable for them, self-assessment, and the development of thinking skills. Flipped Learning technology allows students to be more independent in the educational process, as they independently study theoretical materials and begin to consolidate their knowledge in practice. Students have the opportunity to manage their time, learn the information they need, and develop critical thinking in independent learning (Mason, Shuman, & Cook, 2013). Flipped Learning is introduced as an effective tool for involving students in the process of independent learning [8;1b]

Flipped learning technology is a concept of a radical rethinking of the organizational foundations of the educational process, which involves the independent mastering of the main theoretical educational materials of classroom and extracurricular activities using audiovisual and didactic tools and the practical consolidation of new knowledge and skills in the classroom under the guidance of a teacher. The technology is also known as the "flipped classroom", "rotating lesson", "turned-learning". [4;7b] This technology creates broad opportunities for

practical exercises and practical tasks in addition to theoretical ones.

In flipped learning technology, instead of conveying new content during the lesson and assigning homework for practical exercises, the content of the lesson is presented to students before the lesson begins. This allows students to independently master the content of the subject, saving time for more interesting and interactive lesson topics.

The above technologies develop the formation of individual knowledge from general group learning during the lesson. They switch from group learning to individual learning through direct instructions. Students acquire information about the new topic that they need to prepare for outside the classroom in a convenient way, that is, by watching or performing videos or presentations on the topic, writing or reading, asking questions or making presentations, and come to the lesson with theoretical knowledge about the new topic, and further improve this knowledge in the classroom.

Analysis and Results

It is advisable to conduct lessons using flipped learning technology in the following main stages.

1) Preparation of Educational Materials

– video lectures are the most effective and common method of using flipped learning technology. Teachers show video content using various programs or educational videos available from reliable sources. Videos should be concise, interesting, and cover the information and concepts necessary for students;

– when creating additional materials, along with videos, teachers can provide resources such as online quizzes and interesting tasks to reinforce learning. These materials should correspond to the content of the video and help students understand the topic more deeply.

2) Distributing Materials

– when choosing a suitable platform, an online platform or learning management system is selected for hosting and distributing educational materials (popular options include Google Classroom, Moodle, or Canva). It is ensured that the selected platform is open to all learners and supports various file formats;

– Time management explains how students should access and engage with the pre-class materials. Instructions are given on where to find the resources, how much

time to spend reviewing them, and any specific tasks they need to complete before coming to class.

3) Encourage Pre-Class Activities

– Time management helps students set deadlines for completing pre-class work. This helps build accountability and ensures that everyone is ready for individual discussions;

– Regularly check students' progress and understanding to identify any potential problems or areas where additional support may be needed. This can be done through online quizzes, discussions, or short thinking tasks.

4) In-class Activities

– In-class activities are used for interactive activities that help students deepen their understanding and application of the concepts covered in the pre-class materials to promote active learning.

This may include group discussions, problem-solving exercises, case studies, simulations, or hands-on experiences; – In guidance and support, teachers should be available to answer questions, provide explanations, and provide guidance as students participate in the activities. This personal attention helps to address any misconceptions or difficulties that students may encounter during their independent learning process.

5) Assessment of Learning Outcomes

– In-class assessments can take the form of quizzes, short written reflections (concept analysis), process maps, or peer assessments;

– Offering timely feedback requires teachers to provide timely feedback on students' performance to guide their learning. This feedback can be given individually or shared with the entire class to address common misconceptions.

By following these steps, teachers can effectively teach in a changing classroom and create an engaging and student-centered learning environment.

Conclusion/Recommendations

In Flipped Learning technology, unlike traditional lessons, the teacher acts not only as a provider of knowledge, but also as an observer and manager of the activities of students, as a coach. The teacher involves students in the classroom through interesting exercises, increases their interest in practice and develops active communication. Flipped Learning technology is presented as an effective tool for

organizing independent learning of students. This technology enhances communication between teachers and students, making the learning process more interactive. Research shows that with the help of Flipped Learning technology, students can consolidate their knowledge and develop their creative abilities of independent thinking.

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