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PROBLEMS AND SOLUTIONS IN THE APPLICATION OF PROBLEM-BASED LEARNING TECHNOLOGIES IN PEDAGOGICAL PRACTICE

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Annotatsiya: Ushbu maqolada texnologik ta’limda amaliyot darslarini loyihaviy faoliyat asosida tashkil etish masalalari ilmiy jihatdan tahlil qilinadi. Loyihaviy yondashuvning pedagogik ahamiyati, darslarni tashkil etish usullari, yuzaga keladigan muammolar va ularning yechimlari batafsil bayon etilgan. Tadqiqot shuni ko‘rsatadiki, loyiha asosidagi amaliyot darslari o‘quvchilarning nazariy bilimlarini amaliy kompetensiyalarga aylantirish, ijodiy va mustaqil fikrlash ko‘nikmalarini rivojlantirish, shuningdek, jamoaviy ishlash va mas’uliyatni oshirishda samarali vosita hisoblanadi. Shu bilan birga, vaqt, resurslar va baholash kabi muammolarni oldindan aniqlash va ularni ilmiy asosda hal etish texnologik ta’lim jarayonining sifatini oshirishga xizmat qiladi.

Kalit so‘zlar: loyihaviy faoliyat, texnologik ta’lim, amaliyot darslari, pedagogik yondashuv, muammolar va yechimlar, kompetensiya, ijodiy ko‘nikmalar

Аннотация: В данной статье научно рассматриваются вопросы организации практических занятий в технологическом образовании на основе проектной деятельности. Подробно анализируются педагогическая значимость проектного подхода, методы организации занятий, возникающие проблемы и пути их решения. Исследование показывает, что практические занятия на основе проектов являются эффективным инструментом для превращения теоретических знаний учащихся в практические компетенции, развития творческого и самостоятельного мышления, а также повышения навыков командной работы и ответственности. При этом предварительное выявление и научное решение проблем, связанных со временем, ресурсами и оценкой, способствует повышению качества процесса технологического обучения.

Ключевые слова: проектная деятельность, технологическое образование, практические занятия, педагогический подход, проблемы и решения, компетенции, творческие навыки

Abstract: This article scientifically analyzes the organization of practical lessons in technological education based on project-based learning. The pedagogical significance of the project approach, methods of lesson organization, emerging problems, and their solutions are discussed in detail. The study demonstrates that project-based practical lessons are an effective tool for transforming students’ theoretical knowledge into practical competencies, developing creative and independent thinking, as well as enhancing teamwork and responsibility skills. At the same time, pre-identifying and scientifically addressing challenges related to time, resources, and assessment contributes to improving the quality of the technological education process.

Keywords: project-based learning, technological education, practical lessons, pedagogical approach, problems and solutions, competencies, creative skills

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Introduction One of the primary objectives of the educational process in the field of technological education is the development of practical skills. While traditional practical lessons are often focused on reinforcing theoretical knowledge, project-based practical activities provide students with opportunities to analyze real-world problems, develop alternative solutions, and apply the results in practice. From this perspective, project-based activity is considered an effective tool for fostering students' independent thinking, as well as their creative and research skills in technological education.

Modern pedagogical practice demonstrates that project-based practical lessons increase students' engagement, teach them to work collaboratively and share responsibility, and significantly enhance their level of professional preparedness. At the same time, this approach requires the teacher to carry out careful planning, prepare appropriate resources, and develop clear assessment criteria.

2. Pedagogical Significance of Project-Based Activity.

In the field of technological education, the effective organization of practical lessons is essential for transforming students' theoretical knowledge into practical competencies. From this perspective, project-based activity is considered an effective pedagogical tool for developing students' independent thinking, problem analysis, and creative approach skills within the educational process.

The pedagogical significance of the project-based approach is manifested in the following key aspects:

1. Application of theoretical knowledge in practice: Students apply the theoretical knowledge they have acquired to solve real technological problems, which contributes to a deeper understanding of the subject matter.

2. Solving problem situations: Project-based work teaches students to analyze complex situations, compare alternative options, and identify optimal solutions.

3. Development of collaborative and individual activities: Cooperation within a group, task distribution, and a sense of personal responsibility encourage students to work effectively.

4. Creative and innovative approach: Project-based activities encourage the development of new technological solutions, products, or methods, thereby fostering students' creative thinking.

5. Reflection and self-assessment: Project outcomes enable students to analyze their own performance, identify their strengths and weaknesses, and improve their professional competence.

At the same time, project-based activity ensures the integrative nature of the technological education process. By combining various disciplines and technologies, it helps students develop systems thinking skills and prepares them for their future professional activities.

As a result, organizing practical lessons based on project-based activity makes the educational process interactive, inquiry-based, and effective, while contributing to students' professional and personal development.

3. Methods for Organizing Practical Lessons Based on Project-Based Activity.

In technological education, organizing practical lessons based on project-based activity significantly increases the effectiveness of the learning process. The project-based approach enables students to apply theoretical knowledge in practice, solve problems, and develop creative and research skills. At the same time, the project process fosters students' abilities to work collaboratively, share responsibility, and present their results.

The following stages are of key importance in organizing practical lessons based on project-based activity:

1. **Defining goals and objectives:** The project objective should be clearly defined, as it enables students to achieve the expected outcomes and determine appropriate assessment criteria.

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2. **Planning and resource preparation:** The necessary materials, equipment, and software tools are prepared in advance. At this stage, it is determined what tasks students will perform during the project process and which technologies they will use.

3. **Implementation process:** Students work on the project individually or in groups, analyze problems, develop solutions, and test the results in practice. The teacher monitors the process, provides guidance, and methodologically supports the activity.

4. **Monitoring and assessment:** The final results of the project are evaluated based on clearly defined assessment criteria. During the evaluation process, consideration is given to the student's ability to work independently, their level of participation in both individual and group activities, their creative approach, and their skills in presenting project outcomes.

5. **Conclusion and presentation:** The final results of the project are presented, and students defend their work. This process provides an opportunity for reflection, enabling students to identify their strengths and weaknesses and to further improve their future professional activities.

At the same time, organizing practical lessons based on project-based activity ensures the integrative nature of technological education. By combining various disciplines and technological tools, it helps students develop systems thinking, understand interconnections, and enhance their level of readiness for professional activity.

As a result, project-based practical lessons increase students' engagement, teach them to work independently and creatively, and make the pedagogical process interactive and effective.

Problems and Solutions

While organizing practical lessons based on project-based activity enhances the effectiveness of the technological education process, it also gives rise to certain challenges. First, project work requires more time, which necessitates careful lesson planning and the optimization of each stage. In addition, the lack of technological equipment, materials, and software tools may reduce the effectiveness of the project. In such cases, the use of virtual laboratories, simulation software, and free online platforms is recommended.

Student motivation is also a crucial factor, as in some cases they may not demonstrate sufficient engagement in project activities. To address this issue, project topics should be relevant and engaging, and the outcomes should have practical significance for students. At the same time, positive competition within groups and the use of incentive strategies can help increase students' participation.

Furthermore, assessing the outcomes of project-based activities can be challenging, as students contribute differently in both individual and group work. To address this issue, it is necessary to develop clear and transparent assessment criteria and to evaluate each stage and outcome separately. At the same time, the teacher's methodological preparedness is a key factor in ensuring project effectiveness. The teacher should possess a thorough understanding of project methodology, technological processes, and assessment criteria, and should continuously engage in professional development and the exchange of experience.

Thus, by systematically identifying the challenges that arise during the organization of project-based practical lessons and developing scientifically grounded solutions, it is possible to maximize the development of students' knowledge, skills, and competencies in technological education. This approach fosters students' independent thinking, creativity, and research abilities, while making the pedagogical process interactive and effective.

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Conclusion Organizing practical lessons in technological education based on project-based activities plays a crucial role in enhancing the effectiveness of the learning process and developing students' vocational readiness. The project-based approach enables students to apply theoretical knowledge to real-world problem-solving while fostering skills in independent thinking and creative approaches. Furthermore, project-based practical lessons cultivate students' abilities in teamwork, shared responsibility, effective time management, and the presentation of results.

However, certain pedagogical and organizational challenges may arise when organizing practical lessons based on projects. These include a lack of time, limited resources, low student motivation, and complexities regarding assessment. Identifying these issues in advance and developing scientifically grounded solutions helps enhance the effectiveness of the technological education process. For instance, these challenges can be overcome through precise project planning, the use of alternative resources, the selection of engaging and real-world topics, and the development of transparent assessment criteria.

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