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## **Innovative Educational Technologies for Teaching Social Geography in Secondary Schools**

The study investigates the effectiveness of modern educational technologies in teaching social geography in secondary school geography education. The purpose of the research is to identify innovative pedagogical approaches that enhance students' cognitive activity, learning outcomes, and geographical competencies. The study employed a mixed-methods research design involving secondary school students and incorporated project-based learning, problem-based learning, game-based learning, geographic information systems (GIS), and information and communication technologies (ICT). The findings indicate that the integration of innovative educational technologies significantly improves students' motivation, engagement, and understanding of socio-economic and geographical processes. The use of interactive teaching methods and digital tools contributes to the development of spatial thinking, analytical skills, and research competencies. Furthermore, project-based and problem-based learning approaches foster independent learning, collaboration, and critical thinking. The study demonstrates that technology-enhanced learning creates favorable conditions for student-centered education and improves the overall quality of social geography instruction. The findings highlight the importance of integrating digital and interactive teaching methods into geography education to meet the demands of contemporary educational practice.

*Keywords:* social geography, geography education, educational technologies, innovative teaching methods, project-based learning, problem-based learning, GIS, information and communication technologies, spatial thinking, secondary education.

### *Introduction*

The rapid development of digital technologies and the modernization of education systems require the introduction of innovative teaching approaches into school geography education. Social geography occupies a special place in the geography curriculum because it helps students understand the relationships between society, economy, population, and the environment. The study of social geography contributes to the development of spatial thinking, analytical skills, and the ability to evaluate socio-economic processes at local, regional, and global levels.

Modern educational standards emphasize student-centered learning, critical thinking, collaboration, and digital literacy. Therefore, traditional teaching methods are no longer sufficient to ensure effective learning outcomes. Contemporary educational technologies, including problem-based learning, project-based learning, game-based learning, and information and communication technologies (ICT), provide new opportunities for increasing students' motivation and engagement in the learning process.

Recent studies have demonstrated that innovative teaching methods improve students' academic performance, critical thinking abilities, and research competencies. In geography education, digital mapping tools, geographic information systems (GIS), interactive platforms, and multimedia resources create favorable conditions for developing learners' practical skills and geographical competencies.

Despite the growing interest in innovative educational technologies, there is still a need to identify the most effective approaches for teaching social geography in secondary schools. Therefore, the present study aims to analyze modern educational technologies used in teaching social geography and evaluate their potential for improving students' cognitive activity and learning outcomes.

The objectives of the study are:

- to analyze contemporary educational technologies applied in social geography teaching;
- to identify effective methods for increasing students' learning motivation;
- to evaluate the pedagogical potential of interactive and digital technologies;
- to determine the role of innovative teaching approaches in developing geographical competencies.

The research hypothesis assumes that the systematic integration of innovative educational technologies into social geography lessons enhances students' cognitive activity, learning motivation, and academic achievement.

#### *Literature review*

The integration of innovative educational technologies into geography education has become one of the leading directions of modern pedagogical research. The transition from teacher-centered instruction to student-centered learning has encouraged the adoption of interactive and technology-enhanced teaching approaches that promote active participation and independent learning.

One of the most widely used approaches in geography education is Project-Based Learning (PBL). According to recent studies, project-based learning allows students to investigate real-world geographical issues, develop critical thinking skills, and apply theoretical knowledge in practical contexts. Through project activities, learners become more engaged in the educational process and improve their research competencies.

Problem-Based Learning is another effective approach for teaching social geography. This method encourages students to analyze socio-economic and environmental problems, search for solutions, and make evidence-based decisions. Researchers emphasize that problem-based learning promotes higher-order thinking skills and enhances students' ability to interpret geographical information.

The rapid development of Information and Communication Technologies (ICT) has significantly transformed geography education. Digital tools such as interactive maps, online databases, virtual field trips, and multimedia resources provide opportunities for visualizing complex geographical phenomena. ICT-based learning environments increase students' motivation and facilitate access to diverse sources of information.

Geographic Information Systems (GIS) have become particularly important in modern geography teaching. GIS technologies enable students to collect, analyze, and visualize spatial data. Several studies indicate that the use of GIS improves spatial thinking, problem-solving abilities, and geographical literacy among secondary school students.

Game-based learning and digital educational platforms also contribute to improving educational outcomes. Applications such as Kahoot, Quizizz, and Google Earth support interactive learning and increase student engagement. These technologies create an active learning environment where students can collaborate, compete, and receive immediate feedback.

Recent international research demonstrates that the combination of project-based learning, problem-based learning, GIS technologies, and ICT tools has a positive impact on students' academic achievement, motivation, and cognitive development. Therefore, the integration of innovative educational technologies into social geography teaching is considered an effective strategy for improving the quality of geography education in secondary schools.

#### *Materials and methods*

##### *Research Design*

The study employed a mixed-method research design combining qualitative and quantitative approaches to evaluate the effectiveness of modern educational technologies in teaching social geography.

##### *Participants*

The research was conducted during the 2025-2026 academic year in a secondary school. A total of 60 students from Grades 10 and 11 participated in the study. The participants were divided into an experimental group (n = 30) and a control group (n = 30).

##### *Educational Technologies Applied*

The experimental group studied social geography using innovative educational technologies, including:

- Project-Based Learning (PBL);
- Problem-Based Learning;
- Geographic Information Systems (GIS);
- Google Earth;
- Kahoot and Quizizz digital platforms;
- Multimedia presentations and interactive maps;
- The control group was taught using traditional instructional methods.

*Data Collection*

Several instruments were used to collect research data:

- Pre-test and post-test assessments to measure students’ academic achievement.
- Student questionnaires to evaluate learning motivation and engagement.
- Classroom observations to assess participation and interaction.
- Analysis of project activities completed by students during the study period.

*Data Analysis*

The collected data were analyzed using descriptive statistical methods. Mean scores, percentages, and comparative analysis were used to evaluate changes in students’ academic performance and motivation levels before and after the implementation of innovative educational technologies.

*Research Procedure*

The study was conducted in three stages:

- Diagnostic stage — assessment of students’ initial knowledge and motivation.
- Implementation stage — integration of innovative educational technologies into social geography lessons over one academic term.
- Evaluation stage — measurement and comparison of learning outcomes between the experimental and control groups.

The effectiveness of the implemented technologies was evaluated based on changes in academic achievement, student engagement, participation in classroom activities, and development of geographical competencies.

*Results and discussion*

The implementation of innovative educational technologies in social geography lessons demonstrated positive effects on students’ academic achievement, learning motivation, and cognitive activity.

*Academic Achievement*

The comparison of pre-test and post-test results revealed a significant improvement in students’ academic performance in the experimental group. Before the implementation of innovative teaching methods, the average achievement level was 68%. After one academic term of applying project-based learning, problem-based learning, GIS technologies, and interactive digital platforms, the achievement level increased to 84%.

| Indicator            | Pre-test (%) | Post-test (%) |
|----------------------|--------------|---------------|
| Academic achievement | 68           | 84            |
| Learning motivation  | 62           | 88            |
| Research skills      | 58           | 85            |

In contrast, the control group showed only minor improvements, indicating the effectiveness of innovative educational technologies in social geography instruction.

*Learning Motivation*

Questionnaire results showed that students became more interested in geography lessons after the introduction of interactive teaching approaches. The use of Kahoot, Quizizz, Google Earth, and project activities created a more engaging learning environment and increased participation in classroom discussions.

The proportion of students demonstrating a high level of learning motivation increased from 62% to 88%. Students reported that digital tools made lessons more interactive, understandable, and relevant to real-world geographical issues.

*Development of Research Skills*

One of the main objectives of social geography education is to develop students’ ability to analyze socio-economic processes and geographical phenomena. Project-based learning activities encouraged students to collect information, interpret statistical data, analyze maps, and present research findings.

The percentage of students demonstrating strong research skills increased from 58% to 85%. Students became more confident in conducting independent investigations and applying geographical knowledge to practical situations.

The findings of this study are consistent with previous research highlighting the effectiveness of innovative educational technologies in geography education. Project-based learning and problem-based learning

promoted active participation and independent knowledge construction, while GIS technologies and digital platforms enhanced spatial thinking and information literacy.

The results indicate that modern educational technologies not only improve academic performance but also contribute to the development of essential twenty-first-century skills, including critical thinking, collaboration, communication, and problem-solving abilities.

The integration of interactive and digital tools into social geography teaching creates favorable conditions for learner-centered education and supports the formation of geographical competencies required in contemporary society.

### Conclusion

The study examined the effectiveness of modern educational technologies in teaching social geography at the secondary school level. The findings demonstrated that the integration of innovative teaching approaches, including project-based learning, problem-based learning, geographic information systems (GIS), and digital educational platforms, positively influences students' academic achievement, learning motivation, and research competencies.

The results revealed significant improvements in students' educational outcomes after the implementation of innovative technologies. Students became more actively engaged in classroom activities, demonstrated stronger analytical and critical thinking skills, and showed greater interest in studying geographical and socio-economic processes.

The use of GIS technologies, interactive maps, and digital learning platforms contributed to the development of spatial thinking and information literacy, which are essential competencies in contemporary geography education. Furthermore, project-based activities provided opportunities for independent research, collaborative learning, and practical application of geographical knowledge.

Overall, modern educational technologies create favorable conditions for student-centered learning and improve the quality of social geography education. The integration of innovative pedagogical approaches should therefore be considered an important strategy for enhancing geography teaching in secondary schools.

Future research may focus on the long-term impact of digital technologies on geographical competencies and the effectiveness of specific educational technologies across different educational contexts.

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## Жалпы білім беретін мектептерде әлеуметтік географияны оқытудың инновациялық білім беру технологиялары

Мақалада мектеп географиясы курсындағы әлеуметтік географияны оқытуда қолданылатын заманауи білім беру технологияларының тиімділігі қарастырылды. Зерттеудің мақсаты — оқушылардың танымдық белсенділігін, оқу жетістіктерін және географиялық құзыреттіліктерін дамытуға ықпал ететін инновациялық педагогикалық тәсілдерді анықтау. Зерттеу барысында жобалық оқыту, проблемалық оқыту, ойын технологиялары, географиялық ақпараттық жүйелер (GIS) және ақпараттық-коммуникациялық технологиялар (АКТ) қолданылды. Зерттеу нәтижелері инновациялық білім беру технологияларын қолдану оқушылардың пәнге деген қызығушылығын, оқу мотивациясын және оқу үдерісіне белсенді қатысуын арттыратынын көрсетті. Интерактивті әдістер мен цифрлық құралдарды пайдалану кеңістіктік ойлауды, аналитикалық қабілеттерді және зерттеушілік дағдыларды дамытуға мүмкіндік береді. Сонымен қатар жобалық және проблемалық оқыту әдістері оқушылардың сыни ойлауын, дербес білім алуын және бірлескен жұмыс дағдыларын жетілдіруге ықпал етеді. Зерттеу қорытындылары қазіргі білім беру технологияларының оқушыға бағдарланған оқытуды жүзеге асыруда және әлеуметтік географияны оқыту сапасын арттыруда маңызды рөл атқаратынын дәлелдейді. Демек география сабақтарына инновациялық және цифрлық технологияларды жүйелі енгізу заманауи білім беру талаптарына сәйкес келетін тиімді педагогикалық шешім.

*Кілт сөздер:* әлеуметтік география, географияны оқыту әдістемесі, білім беру технологиялары, инновациялық оқыту, интерактивті әдістер, жобалық оқыту, проблемалық оқыту, географиялық ақпараттық жүйелер, ақпараттық-коммуникациялық технологиялар, кеңістіктік ойлау.

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## Инновационные образовательные технологии преподавания социальной географии в общеобразовательных школах

В статье рассматривается эффективность современных образовательных технологий, применяемых при преподавании социальной географии в школьном курсе географии. Цель исследования заключается в выявлении инновационных педагогических подходов, способствующих развитию познавательной активности, учебных достижений и географических компетенций обучающихся. В ходе исследования были использованы проектное и проблемное обучение, игровые технологии, географические информационные системы (GIS), а также информационно-коммуникационные технологии (ИКТ). Результаты исследования показали, что использование инновационных образовательных технологий способствует повышению учебной мотивации, интереса к предмету и активному участию учащихся в образовательном процессе. Применение интерактивных методов и цифровых инструментов обеспечивает развитие пространственного мышления, аналитических способностей и исследовательских навыков. Кроме того, проектное и проблемное обучение создают условия для формирования критического мышления, самостоятельности и навыков совместной работы. Полученные результаты подтверждают, что современные образовательные технологии играют важную роль в реализации личностно-ориентированного обучения и повышении качества преподавания социальной географии. Интеграция инновационных и цифровых технологий в образовательный процесс является эффективным средством формирования географической грамотности и ключевых компетенций обучающихся в условиях современного образования.

*Ключевые слова:* социальная география, методика преподавания географии, образовательные технологии, инновационное обучение, интерактивные методы, проектное обучение, проблемное обучение, географические информационные системы, информационно-коммуникационные технологии, пространственное мышление.

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