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Original
research paper

Paper received: Dec 6 2024
Paper accepted: Jun 10 2025
Article Published: Jul 8 2025

The impact of information-developmental teaching of Science and Social Studies on student knowledge²

Extended summary

The comprehensive changes in the world, driven by the emergence of the latest digital technologies, also influence the need for changes in the field of education. Improvements in infrastructure, equipping schools with information and communication technologies (ICT), and adapting learning spaces to modern needs are among the first steps towards improving teaching practices in all schools regardless of their location. The need for students to engage in research, collaboration, environmental changes in students' upbringing, the challenges of new spatial organization, and the presence of digital devices in everyday life have led to numerous recommendations for changes in the teaching process over the past decades. The daily presence of digital devices in students' lives influences the development of their digital competencies. By using ICT, students have an opportunity to explore the possibilities of digital technology and to develop curiosity, as well as the ability to use it for educational purposes. Teachers play a significant role in this process, and through their attitude, knowledge, and digital competencies, they should encourage students to use ICT devices not only for entertainment, but also for learning. Despite potential resistance to accepting digital technology, the teachers' role is to focus on developing both their own and students' higher-order skills (applying information in similar situations, analysis, planning, etc.), as well as to shape and guide students towards the

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2 The content was partially taken from the unpublished doctoral dissertation of Ljiljana G. Bujišić, defended at the Teacher Education Faculty in Belgrade, entitled *The Impact of Informatics-Developmental Teaching of Science and Social Studies on Student Achievement*.

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purposeful use of technology — teaching them how to safely and critically search for information on the internet, how to select reliable sources, and how to use educational platforms and interactive tools. The significant advantages of using Google Classroom are also reflected in the rationalization of teachers' time, who now have more space to focus on the educational and developmental aspects of students. The use of Google Classroom in lessons offers students an opportunity to work differently, independently of space and time, encouraged by various interactive and free materials. During the COVID-19 virus pandemic, an experimental study was conducted with the fourth-grade students of primary schools, whereby the instrument was a test of knowledge. In the organization of the experimental study, students in the control group worked in the usual way, while students in the experimental group used Google Classroom during Science and Social Studies lessons. The aim of the research was to determine whether and to what extent the integration of electronic learning in IT-developmental teaching of Science and Social Studies at a younger school age affects student knowledge in that field. After the new method of work had been introduced, students in the experimental group demonstrated better knowledge in the given field, which indicates that information and communication technology has a positive impact on students' knowledge acquisition. The possibility of communication on digital platforms exists in all relationships, including student-to-student interactions, which can pose a challenge if the platform is used for inappropriate purposes, such as bullying certain students. Therefore, early cooperation with parents, starting already at preschool age, is of great importance in order to develop children's self-confidence, digital competencies, and overall emotional stability.

Future implications can be directed towards analyzing the financial capabilities of schools for implementing and using educational platforms. From a theoretical standpoint, research could also include examining the possibilities of applying these platforms at preschool age, as well as analyzing the impact of digital tools on children aged 3 to 7. Also, implications for further research could focus on potential solutions for facilitating communication with students whose native language is not Serbian, as their numbers are increasing, as well as exploring the use of educational platforms for collaboration in working with students from vulnerable groups.

Keywords: Google classroom, Science and Social Studies, pandemic, information and communication technology, digital technology

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