

**THE ALLURE AND EDUCATIONAL EFFICACY OF NEW
TECHNOLOGIES IN PRIMARY EDUCATION: PERSPECTIVES
FROM STUDENTS, THEIR PARENTS AND TEACHERS IN
DZIERŻONIÓW COUNTY, POLAND**

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ABSTRACT

Introduction: The 21st century (mainly due to COVID-19) has witnessed an unprecedented integration of Information and Communication Technologies (ICT) into all facets of life, including education.

Aim: The primary aim of this article is to analyse the current state of ICT integration in Polish primary education, identifying the key challenges, opportunities, and factors influencing the effectiveness of technology-enhanced learning.

Methods: Dzierżoniowski district of Poland was chosen, and we utilised phone interviews with 10 teachers (questionnaire and interview) and online questionnaires with 60 students and 60 of parents from two contrasting primary schools (public and non-public). Data collection occurred between 11 - 27 May 2020, during the COVID-19 pandemic, focusing on grades 1-3.

Results: The analysis reveals that while Poland has made significant strides in integrating ICT into primary education, challenges persist in areas such as teacher training,

equitable access to technology, and the development of effective digital pedagogies. The results highlight the importance of a holistic approach that considers not only infrastructure and technology but also pedagogical strategies, curriculum development, and ongoing professional development for teachers. The study also identifies potential risks associated with ICT use, such as digital addiction, emphasising the need for comprehensive media literacy education among children. It became clear that use of ICT may benefit in developing key competencies among students.

Conclusion: ICT has shown the potential to significantly enhance the quality and effectiveness of primary education in Poland. However, realising this potential requires a concerted effort from all stakeholders to address the identified challenges and leverage the opportunities presented by technology. Respondents show the need for a continued focus on developing teachers' digital competencies, fostering a culture of innovation in schools, and promoting digital equity to ensure that all students can benefit from the transformative power of ICT.

Keywords: ICT, primary education, digital literacy, teacher training, educational technology

INTRODUCTION

In today's world, technology is rapidly changing the way we live, work, and learn. The integration of new technologies into education, particularly in early childhood classrooms, is a topic of growing interest and debate (Morbitzer, 2007). This study explores the perspectives of both students and teachers on the attractiveness and didactic effectiveness of new technologies in primary schools in Poland (Sarowski, 2017). The research focuses on the use of technologies such as interactive whiteboards, computers, projectors, and educational software in classroom settings. It aims to understand how these technologies are being used, how they are perceived by students and teachers, and their potential impact on the learning process. The level of technological skills among students and teachers and their views on the future of technology in education is crucial for the successful adaptation (Hul'ova & Parlak, 2015) and everything changed during the pandemic (Stochmal, et al., 2021). This research is particularly relevant in the context of the increasing emphasis on digital literacy and the need to prepare young children for a future where technology will play an even greater role (Marczuk & Zakrzewski, 2010). This area has valuable insights for educators, policymakers, and parents on the effective integration of technology in early childhood education. New technologies like computers, interactive whiteboards, and the internet are transforming education (Czarkowski, 2014). E-learning, blended learning, and m-learning offer flexible learning opportunities (Kuźmicz, 2015; Kupisiewicz, 2013). Czech schools extensively use ICT, including the internet, CD/DVD resources, interactive whiteboards, computers, and digital cameras (Hlasna et al., 2017). Poland digitises education by providing schools with computers/internet, training teachers in ICT, and developing digital resources (Tanaś, 2015; Siemińska-Łosko, 2006). Internet users in Poland have grown significantly (Majchrzak, 2008; PBI,

2020). Educational platforms, online libraries, and digital textbooks are increasingly prevalent (Urbanek, 2015; Ostarek, 2019; Stolarczyk, 2017). Programmes like "Digital School" (Łysek, 2013) and online safety initiatives (Fundacja Dzieci Niczyje, 2020) support ICT use. Didactics, the science of teaching and learning, covers educational goals, content, methods, and organisation (Okoń, 2003). It is divided into general didactics (overarching principles) and specific didactics (subject/level-specific) (Pólturzycki, 2012). Key concepts include learning (acquiring knowledge/skills), teaching (guiding learning), and education (broader development) (Nawroczyński, 1948; Pólturzycki, 2012; Okoń, 2003). The didactic process is the planned teacher-student interaction for specific goals (Nowacki, 1988). Teacher competence combines knowledge, skills, attitudes, and values (Dylak, 2009). Important competencies include communication, creativity, cooperation, pragmatism, and digital literacy (Taraszkiewicz, 2001). Teachers are now facilitators of learning, fostering engagement and critical thinking (Adamek, 2008).

Student responsibilities are defined by school statutes, including behavior, attendance, and rule adherence.

RESEARCH QUESTION AND MOTIVATION

This study aims to explore the alignment of these developments with the actual situation in schools, focusing on the positive aspects of technological solutions in education, particularly for younger students. The judicious use of technology can streamline teachers' work and provide students with new, adaptable learning environments conducive to their development in a rapidly changing world such as the pandemic (Klisowska, et. al, 2020; Jelinska, Paradowski, 2021). This is crucial to prevent future societal exclusion due to a lack of digital literacy and to ensure appropriate functioning in the virtual sphere, which plays a significant role in contemporary life. "New" technologies, in this context, refer to those that have been introduced or gained prominence in Polish schools within the last 5-10 years and continue to emerge. What are the opinions of teachers and students of selected primary schools in the Dzierżoniowski district on the attractiveness and didactic effectiveness of new technologies in conducting classes in lower grades? Specific Research Problems: What are the opinions of teachers and students in lower grades about the use of new technologies? What new technologies are present in classrooms, and how often are they used in teaching? How do teachers assess their skills in using new technologies, and how do students assess them?

To what extent are new technologies helpful in teaching, according to teachers and students in lower grades? What are the opinions of teachers and students in lower grades about conducting classes with the use of new technologies? Will the use of new technologies change teaching practices in lower grades in Polish schools in the next few years, and if so, how?

DATA AND METHODOLOGY

This research explores the use of new technologies in early childhood education (grades 1- 3) in Poland, specifically within the Dzierżoniowski district. The study was conducted through phone interviews with 10 teachers and online questionnaires completed by 60 students from two schools: Public Elementary School No. 4 with Integration Units in Bielawa (Located in the southern part of Bielawa (known as - Upper Bielawa, this public school serves over 500 students and boasts well-equipped classrooms, good hygiene standards, and a welcoming atmosphere) and Non-Public Elementary School in Gilów (a small, non-public school with just over 60 students, this institution is characterised by a friendly, home-like atmosphere fostered by the principal and teachers, being actively involved in organising various school events) both Dzierżoniowski district, Lower Silesian Voivodeship, Poland. The district features diverse terrain, including plains, hills, and mountains (Sudetes Foothills, "Sowie" Mountains). Data was collected between May 11th and May 27th, 2020, during the COVID- 19 pandemic, which necessitated remote data collection methods. Due to pandemic restrictions, data collection relied on phone interviews and online questionnaires.

Descriptions of the schools are based on prior visits or information available on their websites.

Participants Teachers: 10 female teachers (100% of the sample) from grades 1-3, aged 24-61, with varying levels of experience (1-37 years) and education (bachelor's and master's degrees). All teachers had participated in at least one professional development course related to early childhood education.

Participants Students: 60 students (grades 1-3), with a slight majority of boys (57%). Most students resided in small towns (47%) or villages (45%).

Participants Students Parents. 60 parents, 10% under 24 years old, predominantly (50%) were aged between 24-30 years, 23% aged 31-40, 17% aged 41-50.

Teachers were covered with mixed methodology (Paradowski, et. al., 2021). Interviews analyses were performed under QDAS philosophy.

Analysis is performed in a combined way students and parents (qualitative) - vs teachers (mixed qualitative and qualitative).

RESULTS

We have aggregated all surveys of children, their parents and teachers as well as interviews of teachers. Information obtained from parents is the least important (have supplementary character) and we concentrate on students and teachers.

Use of New Technologies According to Respondents

46% of students reported that they “very much enjoy” using electronic devices, 27% “enjoy” using them, and 23% “love using” them [Fig. 1].

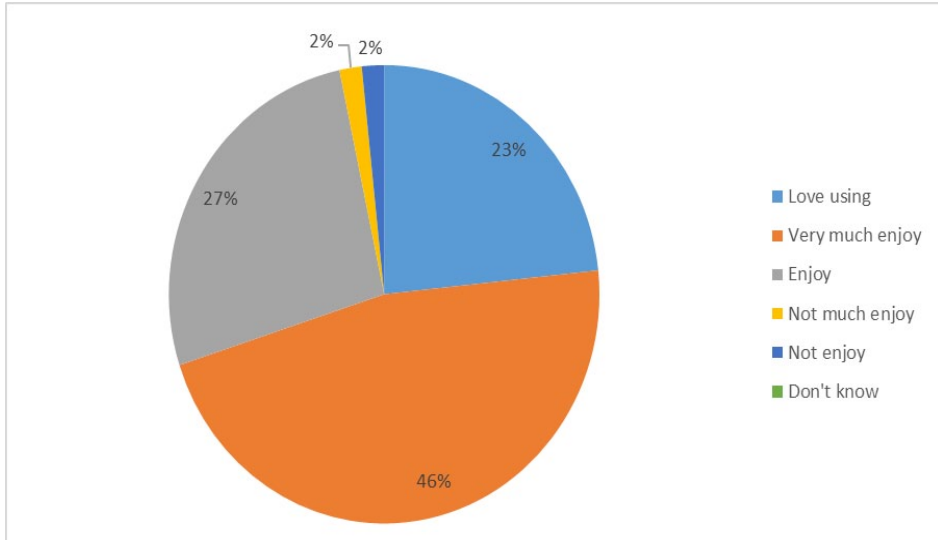


Fig. 1. Responses to the question, “How much do you like using electronic devices (computer, laptop, phone, whiteboard)” - analysis of student survey results.

48% of students believed they did not overuse electronic devices, while 30% admitted to overusing them. 22% were unsure. Teachers generally held positive views of technology in education, emphasising its importance in modern communication, its role in enhancing learning experiences, and its ability to illustrate complex concepts. However, they also stressed the importance of controlled usage and parental monitoring. 78% of students had received assignments to be submitted digitally, highlighting the role of technology in remote learning during the pandemic. 47% of students preferred a mix of traditional (paper-based) and digital (computer-based) homework, while 38% preferred exclusively digital homework. Teachers confirmed the integration of digital tools and educational platforms into their teaching, although 3 out of 10 teachers expressed reservations about increasing their use. Their reasons included concerns about teaching children to use new technologies and the potential for students to perceive technology as the only engaging way of learning.

67% of parents stated that the use of new technologies during lessons was “very helpful.” For example, 63% noted that it improved memory retention through displayed content and videos, and 50% reported that it enhanced focus.

Classroom Equipment with New Technologies, Its Use, and Usefulness in Conducting Classes According to the Respondents

Students identified interactive whiteboards (40%), computers (39%), and projectors (19%) as the most common technologies in their classrooms. Students reported that new technologies were most frequently used in Polish language (27%) and mathematics (22%) classes, followed by foreign languages (15%) and science (13%) [Fig. 2].

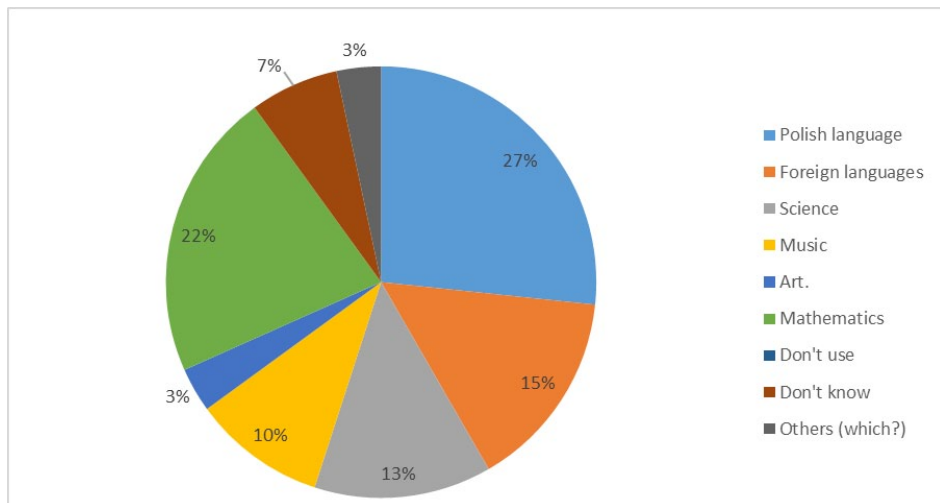


Fig. 2. Responses to the question, “In what classes do your teachers most often use new technologies besides computer science lessons?”; analysis of student survey results.

60% of students believed that teachers should use new technologies more often in their lessons. 8 out of 10 teachers reported using interactive whiteboards in their classrooms. 6 out of 10 teachers used the interactive whiteboard daily, while another 2 used it less frequently. 67% of students felt they learned and retained more information when teachers used new technologies. 75% of students found electronic devices “very helpful” in class.

They reported that technology helped them remember information better (36%), stay focused (29%), and solve tasks faster (28%). Teachers found new technologies to be very helpful or significantly helpful in their teaching, particularly in illustrating difficult concepts and engaging students. They noted that technology facilitated access to information, enhanced lesson delivery, and improved learning outcomes.

Parents asked about replacing books with tasks completed via computers, 50% of them rated this as a “good idea,” and 28% as a “very good idea”.

Level of Proficiency in Using New Technologies

Students rated their own technology skills as “very good” (45%) or “good” (41%) [Fig. 3].

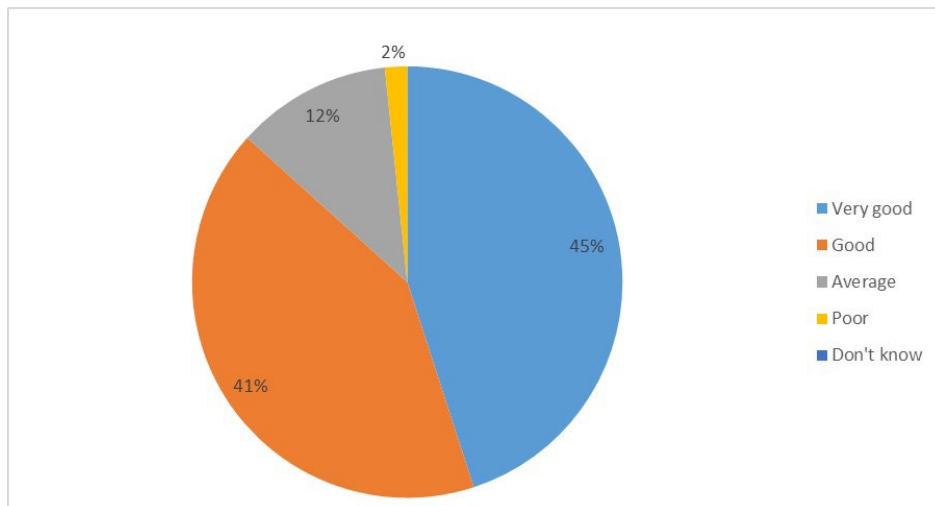


Fig. 3. Responses to the question, “To what extent are you able to operate electronic devices (computer, interactive whiteboard, telephone, etc.)?” - analysis of student survey results.

73% of students rated their teachers as “very good” at using technology in the classroom. Teachers generally assessed their technology skills as good, sufficient, or medium. One teacher considered her skills very high but not essential for teaching young children.

Changes in the Implementation of Classes in Lower Grades with the Use of New Technologies in Polish Schools in the Near Future in the Opinion of the Respondents

55% of students believed that having a school laptop for each student would be “very helpful,” while 30% considered it “moderately helpful.” Students expressed a desire for laptops (40%) and tablets (22%) to be permanently available in their classrooms [Fig. 4].

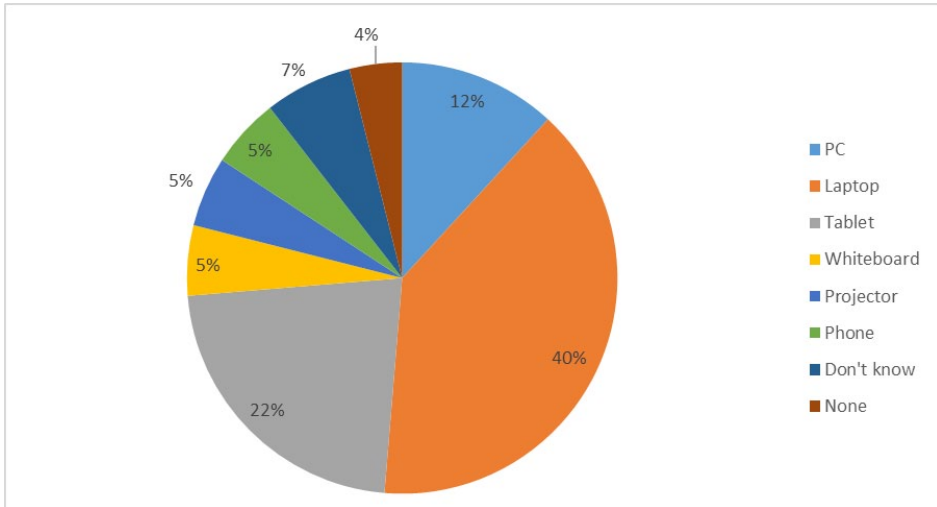


Fig. 4.. Responses to the question, "What electronic devices do you think should permanently appear in your classroom to help you learn?" - analysis of student survey results.

Teachers envisioned a future where students would use school-provided tablets connected to a teacher's device, allowing for monitoring and guidance. They emphasised the growing importance of digital literacy and media education, while also acknowledging potential challenges related to funding and the need for balanced technology use.

Half of the parents (50%) preferred mixed teaching methods that use both traditional and modern technologies. Only 20% favoured fully modernised methods, and 10% opted for traditional-only methods.

DISCUSSION

Students largely enjoyed using electronic devices, with 73% reporting they "like" or "very much like" using them (own research). Almost half (48%) denied excessive use, though 30% admitted to it. Most (78%) had submitted assignments electronically, indicating technology's integration into their learning. Students favoured a blended approach to learning, preferring a mix of traditional and digital methods for homework.

Teachers acknowledged technology's importance, saying that "new technologies are very necessary" for modern communication and education. They highlighted its use for educational games, illustrating complex concepts, and enhancing engagement. "New technologies help illustrate different phenomena," said one teacher. Most (7/10) wanted more technology in lessons, citing digital materials, educational platforms, and interactive tools as beneficial. However they cautioned against over-reliance, with one teacher noting, "chil-

dren must learn how to use such technologies...[or] traditional methods would become boring”.

Interactive whiteboards, computers, and projectors were common classroom technologies Teachers used them most in Polish and maths, less so in other subjects. A majority of students (60%) wanted more technology use, while teachers reported using interactive whiteboards most frequently. “I use the interactive whiteboard daily,” one teacher shared

Students rated their tech skills as “very good” (45%) or “good” (41%), and teachers’ skills even higher (73% “very good”) . Both groups found technology very helpful in class.

Students said it improved memory (36%), focus (29%), and problem-solving (28%). Teachers echoed this, finding it enhanced engagement, facilitated instruction, and improved learning outcomes. “Students are more engaged in the educational process,” noted one teacher, while another said, “technology helps to acquire knowledge more quickly” (own research).

Students preferred mixed teaching methods (53%), followed by technology-focused (35%), and traditional (10%). Most teachers (8/10) also favoured a blended approach. “It is important to mix the use of new technologies with traditional methods,” one teacher explained (own research). Students thought individual school laptops would be beneficial. Teachers envisioned increased technology use, including online learning and digital textbooks, but worried about funding and potential negative impacts. “The school of the future will certainly be equipped with modern technological equipment,” one teacher predicted, while another cautioned about “the negative impact of excessive technology”.

Parents in majority (78%) would like to reduce the amount of books their pupils need to take to school by replacing them with electronic means.

CONCLUSIONS

The findings reveal that both students and teachers generally hold positive attitudes towards the use of technology for learning. Interactive whiteboards, computers, and projectors are commonly used in classrooms, particularly in Polish language and mathematics lessons (Kupisiewicz, 2012). Students and teachers generally reported having good technology skills. They perceive technology as helpful for learning, contributing to easier understanding, increased engagement, and better retention of information. (Bereźnicki, 2011) Students expressed a preference for lessons that combine traditional methods with new technologies. (Pilch & Bauman, 2010) Teachers emphasised the importance of using technology for educational purposes and highlighted the need for parental control over children’s technology use (Maszke, 2008). Both students and teachers anticipate increased use of technology in education, including individual devices and digital learning materials. Concerns were raised about the financial resources needed for such changes and the potential negative impacts of excessive technology use (Łobocki, 2010). Overall, this research provides

valuable insights into the current state and future trends of technology use in early childhood education in Poland. The study concludes that new technologies have a significant role to play in enhancing the learning process, but their use should be balanced with traditional methods. It emphasises the need for ongoing teacher training, parental involvement, and careful consideration of the potential benefits and risks of technology use in early childhood education (Kupisiewicz, 2010).

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