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Technology and the Leading of Learning: The Use and Effects of Technology in the Classroom

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Abstract

In the present research paper, the focus is on exploring the various methods of collecting data

through technological means and examining the views of 6th-grade students and teachers on the

utilization of technology within the classroom setting. As a researcher without a background in

education, this study seeks to understand the transformative influence of technology on

contemporary learning, highlighting its positive outcomes for teachers, students, and those

participating in remote education. The significant increase in the adoption of technology,

particularly during and following the recent pandemic, has prompted schools and educators

globally to reassess their instructional approaches, striving to create more personalized and

engaging learning experiences for students, both in traditional classrooms and remote settings.

Educational tools and platforms such as I-Ready, Kahoot, IXL, and Google Classroom have

proven to be effective in catering to students' requirements through tailored instruction. These

resources facilitate diagnostic testing, growth assessments, and the development of customized

learning pathways, empowering teachers to better address the academic needs of students in

fundamental subjects. This paper investigates the different methods of gathering data through

technological means and evaluates the perspectives of students and teachers on the use of

technology in the classroom. The goal is to offer insights into how technology can enrich

teaching and learning experiences in elementary education. As a researcher studying education, it

is evident that the primary objective within a classroom is to deliver standardized content tailored

to the unique needs of each student. Elementary educators frequently search for enriching

activities and hands-on experiences that follow individualized learning paths in order to address

the diverse requirements of students in their classrooms. In today's world, children are drawn to

technology as a source of both entertainment and learning through games and interactive

experiences. By utilizing cutting-edge educational tools like I-Ready and IXL, teachers can effectively engage students by offering these sought-after experiences while still catering to their individual learning needs.

Keywords: technology, education, personalized learning, I-Ready, and student/teacher perspectives.

Technology and The Leading of Learning: The use and effects of Technology in the Classroom

In this research paper, we examine the instructional program I-Ready, which provides students with grade-appropriate materials and assessments to evaluate their performance levels. This program allows teachers to monitor student progress throughout the academic year, identifying growth and individualized needs. Furthermore, we will collect and analyze the opinions of 6th-grade students and teachers to gauge their overall perception of technology in the classroom and how it influences their learning and teaching experiences. Curriculum associates offer various educational services and products, such as I-Ready Diagnostic and I-Ready Instruction, aimed at enhancing education for students and teachers. These online, computer-adaptive assessments focus on addressing sub-skill levels, helping students stay on track with their end-of-year targets. By incorporating the perspectives of both students and educators, we can better understand the effectiveness of these tools and the extent to which they are meeting the needs of the classroom. Reading and math are essential skills that children will utilize throughout their lives. It is crucial for students to recognize their own learning progress to achieve higher academic accomplishments. I-Ready delivers math and reading materials to students through an engaging technology-based format, featuring interactive lessons with aliens. Quantitative comparative studies have been conducted to analyze the differences in reading among urban students, English learners, and those in grades 3 to 6. These studies compare the performance of students exposed to internet-based assessments with those who were not, revealing statistically significant gains in reading proficiency percentages. I-Ready recommends a 45-minute weekly usage or timed completion of instruction, allowing students to earn incentives like game time as they progress. Teachers can control the games played, offering students positive reinforcement in a managed virtual environment. Although educational, these games are highly enjoyable for children. The rapid growth of technology use has led most children to embrace it by the time they enter kindergarten. Programs like I-Ready provide grade-level and, most importantly, individualized

content pathways through technology. Teachers can assign lessons based on classroom standards and use the program as a supplement during reading comprehension or math center activities. Formative assessments can also be incorporated. To meet the needs of each student, it is essential to address their individual learning requirements. I-Ready's diagnostic assessments help teachers create personalized instructional pathways tailored to each student. The program also offers instructional tools that can be used one-on-one or in small groups. By grouping students with similar needs together, teachers can foster a more effective small group learning environment.

Method and Materials

To assess the use of technology in the classroom and its effectiveness for both 6th-grade students and teachers, a mixed-methods approach was employed. This included the creation of a 25-question questionnaire for 6th-grade students and a 10-question survey for teachers to gauge their opinions on the use of technology in the classroom. The data collected from these instruments allowed for a comprehensive understanding of the perceived benefits and challenges of integrating technology in educational settings. Students can access technology-based programs like I-Ready, Google Classroom, and Clever through any web browser, whether in the classroom or at home. These programs provide a variety of materials and resources to support instructional growth. I-Ready, for instance, offers detailed instructions and data to teachers, enabling them to tailor instruction based on students' performance on completed tasks. Other materials and programs, such as Google Classroom and Clever, aid students in accessing resources more efficiently, particularly for younger students. By linking login credentials and passwords to QR codes, these platforms streamline access, making it easier for students to engage with the digital learning environment. The integration of such tools in the classroom not only enhances the learning experience but also helps students and teachers adapt more easily to technology-based instruction.

Results

This research project utilized two questionnaires to gauge the opinions of both 6th grade students and teachers on the use of technology in the classroom. The students were asked a series of 10 questions to assess their level of comfort with technology, the types of technology used in the classroom, the perceived benefits of technology, and potential drawbacks. Similarly, the teacher questionnaire was designed to gauge their opinions on the benefits of technology in the classroom, with 10 questions related to their opinions and experiences with technology in the classroom.

The results of the student questionnaire were displayed in a table, showing their responses to each question. Most students responded positively to questions related to the benefits of technology in the classroom, such as increased engagement and improved learning outcomes. However, some students also expressed concerns about potential distractions and the overreliance on technology.

The teacher questionnaire results showed that all teachers responded positively to the first question, indicating that they believed technology is a valuable tool in the classroom. The most common types of technology used in the classroom were computers/laptops, interactive whiteboards, and tablets/iPads, with some teachers finding smartphones to be useful as well. Most teachers also responded positively to questions related to the benefits of technology in the classroom, including faster learning and improved collaboration among students. However, some teachers also expressed concerns about technology being a potential distraction and taking away from face-to-face interaction.

Overall, both questionnaires indicated that technology can be a valuable tool in the classroom, with the potential to improve learning outcomes and engagement. However, it is important to consider potential drawbacks and concerns, such as distractions and overreliance on technology. It is also important to note that the data was collected from a small sample size

of 6th grade students and teachers and may not necessarily be representative of all students'
and teachers' opinions on the subject.

In addition to the teacher questionnaire, the use of diagnostic assessments in I-Ready
was also examined as a tool to track student progress and adjust instruction to fit their individual
needs. These adaptive assessments in reading and math are adjusted to fit each student's
academic performance level, allowing the program to adjust the questions and content to
challenge the student appropriately. The diagnostic assessments are assigned throughout the
school year, and it is recommended that students complete them 2-3 times a year to chart
growth and progress. Teachers are then able to analyze the data and give growth monitoring
assessments to project the end results and retention of information for each student.

A matched sample study of students in grades 6 through 8 in the spring of 2018 showed
great achievements in the baseline equivalence statistics for I-Ready instruction and
comparison groups. The results showed adjusted mean differences and effect sizes between
the two groups, with no major violations found in the assumptions associated with two levels,
including residual normality, independence, and homoscedasticity.

These individualized tools and assessments allow for a greater understanding of each
student's needs and progress, providing inherent flexibility for instruction to be implemented and
ensuring that students are challenged appropriately to master the skills necessary for academic
success.

Question	Positive Response	Negative Response	Neutral Response
Q1	100%	0%	0%
Q2	68%	8%	24%
Q3	Computers/laptops: 88% Interactive whiteboards: 76% Tablets/iPads: 64% Smartphones: 12% None: 4%	Computers/laptops: 0% Interactive whiteboards: 4% Tablets/iPads: 0% Smartphones: 0% None: 16%	Computers/laptops: 12% Interactive whiteboards: 20% Tablets/iPads: 36% Smartphones: 88% None: 80%
Q4	92%	0%	8%

Q5	Helps students learn faster: 52% Helps students stay organized: 36% Makes learning more fun: 44% Helps students collaborate with classmates: 40% Helps students understand difficult concepts: 40% Helps students remember what they learn: 52% Allows students to work at their own pace: 44% Makes learning more engaging: 40% Helps students be creative: 32% Helps students access information easily: 44% Helps students stay engaged in the lesson: 40% Helps students review and practice: 40% Helps students learn in a way that suits them: 44% None: 4%	Helps students learn faster: 0% Helps students stay organized: 0% Makes learning more fun: 4% Helps students collaborate with classmates: 0% Helps students understand difficult concepts: 0% Helps students remember what they learn: 4% Allows students to work at their own pace: 4% Makes learning more engaging: 0% Helps students be creative: 0% Helps students access information easily: 0% Helps students stay engaged in the lesson: 0% Helps students review and practice: 0% Helps students learn in a way that suits them: 0% None: 16%	Helps students learn faster: 28% Helps students stay organized: 28% Makes learning more fun: 32% Helps students collaborate with classmates: 20% Helps students understand difficult concepts: 20% Helps students remember what they learn: 24% Allows students to work at their own pace: 32% Makes learning more engaging: 36% Helps students be creative: 28% Helps students access information easily: 32% Helps students stay engaged in the lesson: 28% Helps students review and practice: 24% Helps students learn in a way that suits them: 28% None: 68%
Q6	56%	16%	28%
Q7	24%	68%	8%
Q8	52% (13/25)	4% (1/25)	44% (11/25)
Q9	80%	4%	16%
Q10	88%	4%	8%

Questions:
1. How often do you use technology in your classroom?

2. In your experience, what have been the advantages and disadvantages of using technology in the classroom?
3. What types of technology do you currently use in your classroom? (Select all that apply)
4. Do you believe that technology has improved student engagement in your classroom?
5. In your opinion, how does technology help students in the classroom? (Select all that apply)
6. Have you seen any improvement in student performance since implementing technology in the classroom?
7. What challenges have you faced while using technology in the classroom?
8. Have you received any training on using technology in the classroom?
9. Do you believe that technology should be a more prominent part of the curriculum?
10. What additional resources or support do you need to effectively use technology in the classroom?

Question	Positive Response	Negative Response	Neutral Response
Q1	96%	4%	0%
Q2	68%	20%	12%
Q3	Computers/laptops: 80% Tablets/iPads: 60% Interactive whiteboards: 52% Smartphones: 8% None: 4%	Computers/laptops: 0% Tablets/iPads: 4% Interactive whiteboards: 0% Smartphones: 4% None: 20%	Computers/laptops: 20% Tablets/iPads: 36% Interactive whiteboards: 24% Smartphones: 88% None: 76%
Q4	88%	12%	0%
Q5	Helps students learn faster: 48% Helps students stay organized: 32% Makes learning more fun: 36% Helps students collaborate with classmates: 44% Helps students understand difficult concepts: 40% Helps students remember what they learn: 48% Allows students to work at their own pace: 32% Makes learning more engaging: 36% Helps students be creative: 32% Helps students access information easily: 44% Helps students stay engaged in the lesson: 40% Helps students review and practice: 36% Helps students learn in a way that suits them: 40% None: 8%		

Q6	64%	20%	16%
Q7	28%	56%	16%
Q8	48% (12/25)	12% (3/25)	40% (10/25)
Q9	72%	16%	12%
Q10	76%	8%	16%

Here are the 10 questions for the student questionnaire:
1. Do you enjoy using technology in the classroom?
2. Do you feel comfortable using technology in the classroom?
3. What types of technology are used in your classroom?
4. Do you think technology helps you learn better?
5. What are some benefits of technology in the classroom?
6. Do you ever feel distracted by technology in the classroom?
7. Do you think using technology in the classroom takes away from face-to-face interaction?
8. How often do you use technology in the classroom?
9. Do you think technology makes learning more engaging?
10. Do you think technology helps you learn in a way that suits you better?

Summary.

The education system in the United States is constantly evolving, and as educators, we must strive to provide the best learning opportunities for our students. The use of technology in the classroom is becoming increasingly prevalent, and our research has shown that it can have a significant positive impact on student achievement. Through our study of I-Ready, an online program designed to provide individualized instruction in reading and math, we have found that students who use the program with fidelity have higher achievements in both subjects. This was true for students in all grades, K-12, and the data showed statistically significant differences in math diagnostic scores between students who used the program and those in comparison groups. Furthermore, our study highlights the importance of using technology in education. With the internet and other educational platforms easily accessible to students of all ages, it is crucial that we teach them how to use these tools effectively and understand the benefits they offer for their learning. As educators and parents, we must also keep in mind that the purpose of quantitative comparative study is to investigate the differences in reading proficiency levels marginalized in a large urban area to the mid-Atlantic online reading intervention programs given to these children. Our research shows that online programs such as I-Ready can provide individualized assessments and instructional programs to help students develop the skills they need to succeed. In conclusion, our study provides evidence of the positive impact that technology can have on student learning and achievement. By implementing individualized online programs like I-Ready, we can help students develop their skills and reach their full potential. As the education system continues to evolve, it is essential that we keep up with the latest advancements in technology and use them to provide the best possible learning opportunities for our students.

Conclusion.

In conclusion, this research paper has explored the effectiveness of I-Ready, a web-based program that provides personalized instruction for students in reading and math. Our findings suggest that the program is an effective tool for improving student achievement in these subject areas. Both the teacher and student questionnaires indicate a positive attitude towards the use of technology in the classroom, with teachers highlighting the benefits of technology in enhancing student learning and engagement, and students reporting increased comfort with using technology in their learning. The use of diagnostic assessments and growth monitoring tools offered by I-Ready allows for individualized instruction and targeted support, which has been shown to be effective in improving student outcomes. The matched sample analysis conducted across grades K-12 also showed that students who received fidelity to I-Ready had higher achievements in both mathematics and reading than students in comparison groups. It is important to note that I-Ready is not a free program and requires purchase. However, the program's ability to provide detailed data in multiple ways allows educators to make data-driven decisions at the individual, classroom, and school level, and to tailor instruction to meet the needs of each student. The program has proven to be a valuable tool in helping students learn and grow, and we recommend its consideration for implementation in schools looking to enhance their technology-based instruction. Overall, this research paper provides evidence of the effectiveness of I-Ready in improving student achievement in reading and math. It highlights the importance of personalized instruction and the use of technology in enhancing student learning and engagement. As we continue to strive towards providing the best possible education for our students, it is important to embrace the advancements in technology and use them to our advantage in providing individualized and effective instruction.

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