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ЖАРШЫСЫ

Құрылтайшы: *А. Байтұрсынов атындағы Қостанай өңірлік университеті*

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КАЛЫМБЕТОВА, Б.
ИССЛЕДОВАНИЕ РЕШЕНИЙ УЧИТЕЛЕЙ ИСПОЛЬЗОВАТЬ ВКЛАД УЧАЩИХСЯ ВО ВРЕМЯ ОБСУЖДЕНИЯ В КЛАССЕ

При обсуждении в классе восприятие игр учащимися становится для учителей очень сложной проблемой. Если мысли учащихся разумны и эффективны, если в нужном месте и в нужное время убедиться в правильности изложенной мысли, то можно добиться улучшения качества знаний и сотрудничества и единства учащихся. В этой статье было проведено исследование урока опытного учителя, чтобы решить эти проблемы. Наблюдалась полнота, обоснованность идеи ученика, а также восприятие других учеников. Выявлен урок идей ученика, который был принят и отвергнут учителем.

Ключевые слова: идея ученика, решение учителя, мнение ученика, ответ учителя, вклад ученика.

KALYMBETOVA, B.
TEACHERS' DECISIONS TO USE STUDENT INPUT DURING CLASS DISCUSSION

When discussing in class, the perception of games by students becomes a very difficult problem for teachers. If the thoughts of the students are reasonable and effective, if in the right place and at the right time to verify the correctness of the stated thought, then it is possible to improve the quality of knowledge and cooperation and unity of students. In this article, a study of an experienced teacher's lesson was conducted to solve these problems. The completeness, validity of the student's idea was observed, as well as the perception of other students. The lesson of the student's ideas was revealed, which was accepted and rejected by the teacher.

Key words: student's idea, teacher's decision, student's opinion, teacher's response, student's contribution.

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**USING DIGITAL TECHNOLOGY TO ENHANCE SUCCESS
IN MATH CLASSES OF 11th-GRADE STUDENT**

Abstract

The article explores the impact of digital technology on the quality of education in 11th grade mathematics classes. It analyzes the role of information and communication technologies in improving teaching practices and their impact on students. The article stresses the importance of competent use of these technologies and identifies the specifics of digital pedagogy. The study was conducted through an experimental pretest-posttest control group design, and the results suggest that digital technologies will undoubtedly play a significant role in the state's educational process. They will be used in conjunction with traditional forms of education due to their versatile and comprehensive nature, which has a positive effect on all indicators of the quality of education. This approach will help teachers achieve the dynamics, efficiency, and effectiveness of their professional activities.

Key words: education, digital technology, digital pedagogy, educational process, teaching, math.

1 Introduction

The use of digital technologies for teaching and learning math is constantly changing, with an increasing number and variety of devices being used both inside and outside of formal school settings [1]. The development of these technologies has blurred the lines between school and home education, creating blended learning approaches that have the potential to revolutionize the learning process. "Digital technologies and blended learning approaches in schools and higher education institutions have the potential to change the learning process, and numerous studies in this field continue to emerge."[2]. The advancements in technology have brought about significant changes to various aspects of our lives such as our work procedures, social habits, and communication. This has resulted in the proliferation of numerous static and handheld devices that enable information sharing and networking capabilities.

The integration of technology in education has the potential to create a significant impact on teaching and learning practices. With the proliferation of digital technology, there are now many opportunities for communication and social interaction that can enhance the learning experience. Despite this, the implementation of technology in classrooms has been slow, and many teachers find it challenging to keep up with the rapid pace of change. This resistance to technology adoption may be due to external factors beyond their control, as well as the slow pace of systemic change. Numerous studies in this field continue to emerge, highlighting the need to examine the impact of digital technologies on learning, teaching, educational outcomes, and curriculum delivery.

The way we live, communicate and work has been greatly influenced by the technological revolution of recent decades. Education is no exception to this trend, and the use of technology in this field provides new opportunities for communication and social interaction. However, despite the high expectations, the integration of technology in the classroom has been slow and teachers' adaptation to technological changes has been sluggish. One reason for this slow adoption is the lack of sufficient training and support for teachers to effectively incorporate technology in their teaching practices. Additionally, some educators may be hesitant to use technology due to concerns about its potential negative effects, such as increased screen time and distraction in the classroom.

However, research has shown that when used appropriately, technology can enhance student learning outcomes and engagement. For example, digital tools can provide interactive and immersive learning experiences, personalized instruction, and immediate feedback for students. Furthermore, technology can also facilitate collaboration and communication among students and between students and teachers, fostering a more dynamic and interactive learning environment.

To fully realize the potential benefits of technology in education, it is essential that educators receive adequate training and support, and that technology is integrated into the curriculum in a thoughtful and intentional manner. This requires a shift in mindset and a commitment to ongoing professional development to ensure that teachers are equipped with the necessary skills and knowledge to effectively incorporate technology into their teaching practices.

Our main goal is to explore the effectiveness of iPad technology combined with various software programs in formative assessment practices in math classrooms. The integration of iPads and software has the potential to enhance student learning and understanding of mathematical concepts. Our research aims to gain insight into the interaction between teachers, students, and technology and to determine the benefits of iPad technology in facilitating effective learning processes. By examining this specific classroom practice, which has shown positive results in previous studies, we can identify the ways in which tablet technology improves learning outcomes. As suggested by Geiger et al. (2016), future research in this area may include identifying principles to guide teachers in selecting high-quality apps and software, exploring the potential of virtual reality and other emerging technologies, and examining innovative approaches to learning such as blended and flipped classrooms [3].

Moreover, there is a need to investigate the impact of digital technologies on teacher training programs, explore emerging digital tools and their effects on learning outcomes, and harness the potential of digital tools in innovative teaching and learning methodologies. The present study aims

to address the following inquiries: • What are the roles and functions of digital technology in mathematics classrooms? • How do these roles and functions contribute to student achievement?

2 Materials and Methods

The methodology employed in this research article involved the use of a pretest-posttest control group design.Collaboratively, 20 lessons were created using an exploratory approach, which created an environment where the teacher, student, and tablet technology interacted. During the development phase, a trio of three math teachers from an international school in Almaty (Kazakhstan) worked with the authors to design and test the lessons. This trio consisted of two male teachers and one female teacher.

For the experiment, 2 classes were selected for the control groups and the experimental group. In one class, all students (ages 15-16) were given smartphones to use as part of the curriculum and lessons were provided using digital technology. Another group had lessons taught in a traditional format. The school had a subscription to the website Myimaths.com. The curriculum of this website was exactly the same as the curriculum of the school. For the experimental class, individual accounts and passwords for this site were issued. Therefore, it helped the experiment well, since the experimental group and the control groups had the same topics, only the learning approaches were different.

There were provided 2 pre-test and after treatment one post-test. The e-assessment of MYP IB School was chosen as a post test.

3,4 Results and discussion

The research conducted in this study highlights the various functions of smartphone technology that can be utilized for communication and specific actions within these lessons.

Effective formative assessment practices can improve student learning outcomes, and digital technologies like smartphones have the potential to support such practices. According to a study by Kebritchi, Hirumi, and Bai (2010), the use of mobile devices can provide immediate feedback to students, allowing them to reflect on their learning and make necessary adjustments [4]. In addition, mobile devices can be used to track student learning progress and identify areas where students need additional support or guidance. This allows teachers to tailor their instruction to the individual needs of each student, improving the overall effectiveness of the learning experience. Moreover, digital technologies like smartphones can also enable collaborative learning experiences, where students can work together to solve problems and share ideas. This can enhance social interaction and facilitate knowledge sharing among students, leading to a more comprehensive and enriched learning experience.

In addition, studies have shown that using smartphones as an assessment tool can significantly improve the quality of education. According to a study by Zhang and co-authors (2017), using smartphones to conduct formative assessment can improve student engagement and reduce the time spent on knowledge assessment. Moreover, smartphones can help students overcome language and cultural barriers by facilitating communication and collaboration between students from different countries and regions [5]. However, it should be noted that the effectiveness of using smartphones as an assessment tool depends not only on the technological capabilities of the devices, but also on the professionalism of teachers and their readiness to use new technologies in the educational process.

According to a study by Attard and Di lorio (2018), mobile devices such as smartphones can be highly effective tools for formative assessment in the classroom. They found that the use of mobile devices for formative assessment led to improved learning outcomes for students, with particular benefits for those who are struggling. In addition to rapid assessment and timely feedback, mobile devices offer other features that can be beneficial for formative assessment, such as the ability to track student progress over time and provide teachers with summaries of student responses [6]. The authors emphasize the importance of designing mobile device-based assessments that align with specific learning objectives and provide meaningful feedback to both teachers and students. They also discuss potential challenges and limitations of mobile device-based assessment,

including technical issues and the need for teacher training and support. Overall, the chapter provides a useful resource for educators interested in incorporating mobile devices into their formative assessment practices.According to Ross and Morrison (2018), using mobile devices for formative assessment can also promote student engagement and motivation, as it allows for more personalized and interactive learning experiences [7].

However, the effectiveness of smartphone technology as an educational tool for assessment ultimately depends on both the capabilities of the technology and how teachers use it. The integration of smartphone technology in the classroom has the potential to revolutionize the way teachers assess and evaluate their students. However, it is crucial to keep in mind that the effectiveness of the technology ultimately depends on how teachers use it. It is not enough to simply incorporate smartphones into the classroom and expect immediate results. Teachers must be willing to adapt their teaching methods to make the most of the technology's capabilities.

One effective use of smartphones in assessment is through the use of formative assessment techniques. By using apps and software that allow for quick assessment and timely feedback, teachers can identify areas where students may be struggling and adjust their lessons accordingly. The use of smartphones in this way can save time and provide teachers with valuable insights into their students' progress.

Another important consideration when using smartphones for assessment is ensuring that the technology is accessible to all students. It is crucial to ensure that students who do not have access to smartphones are not at a disadvantage. This can be achieved by providing students with access to school-provided devices or ensuring that the technology is used in a way that does not exclude any students.

Overall, the effectiveness of smartphone technology as an educational tool for assessment depends on a variety of factors. It is crucial that teachers are willing to adapt their teaching methods and make the most of the technology's capabilities. By doing so, they can provide students with timely feedback and valuable insights into their progress, ultimately leading to improved learning outcomes.

While the formative assessment processes are often driven by teachers, the quality of the feedback provided to students may vary depending on how teachers respond to the data provided. For more complex software, the quality of the feedback generated by technology becomes even more crucial since effective formative assessment relies heavily on technology-generated feedback. Moreover, the use of digital technologies can motivate the "digital-dependent" generation.

Students	Pre-test score , %	Post-test 1 score , %	Post-test 2 score , %
Student 1	75	72	77
Student 2	62	61	62
Student 3	80	80	78
Student 4	82	81	83
Student 5	23	19	17
Student 6	77	80	78
Student 7	37	38	32
Student 8	19	17	19
Student 9	66	68	67
Student 10	22	26	26
Student 11	64	58	62

Table 1. Pre-test and post-test results of control group students

Students	Pre-test score , %	Post-test 1 score, %	Post-test 2 scores, %
Student 1	79	78	84
Student 2	30	42	51
Student 3	26	13	22
Student 4	71	49	67
Student 5	58	75	75
Student 6	58	70	75
Student 7	17	26	25
Student 8	83	86	93
Student 9	25	30	39
Student 10	72	81	87
Student 11	60	71	75
Student 12	47	36	51

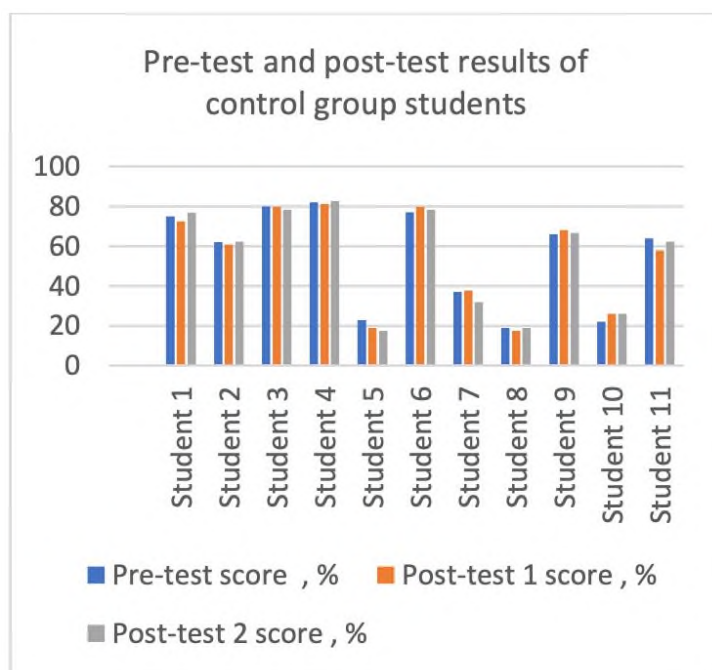*Table 2. Pre-test and post-test results of experimental group students*

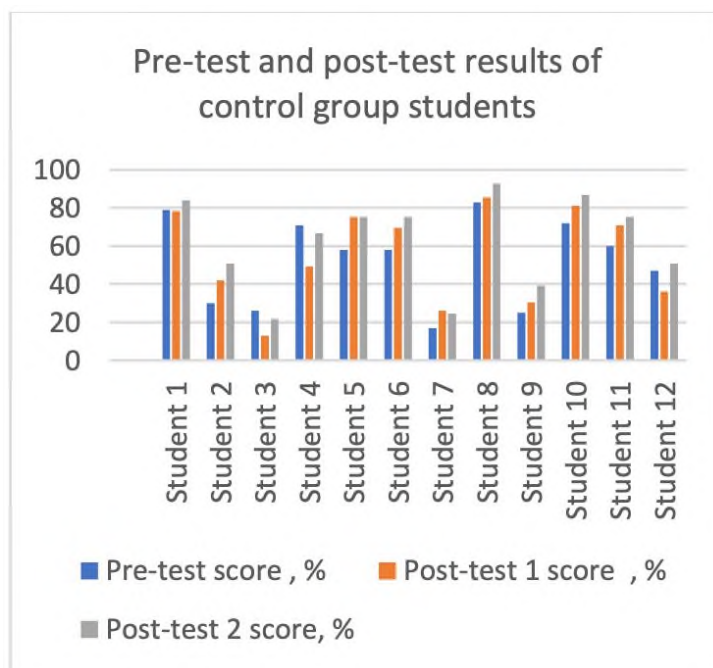*Diagram 1.* – Pre-test and post test results of control group students

Diagram 2. – Pre-test and post test results of control group students

Table 1 displays the comparison of the pre-test and post-test results of the control group students, while Table 2 shows the same for the experimental group. By analyzing these tables and the corresponding graphs, we can observe the changes in the results of both groups. The collected data suggests that the experimental group students showed significant improvement in their performance after the experiment. The use of technology in the classroom, such as smartphones, can enhance formative assessment processes by providing more opportunities for feedback and interaction. However, it is important for teachers to have a clear understanding of effective pedagogical strategies to incorporate technology in the classroom. For instance, teachers in this study emphasized the importance of developing their questioning and feedback skills to effectively facilitate formative assessment processes. These findings align with the recommendations of Feldman and Capobianco (2008) on building effective classroom technology and formative assessment processes [8]. Small changes in the type of questions or feedback used by the teacher can have a significant impact on student understanding and learning.

5 Conclusion

Teaching mathematics traditionally involves focusing solely on calculations and numbers, which has caused many students to dislike or struggle with the subject. However, new research-based approaches to teaching mathematics have been developed to increase students' interest and motivation in the subject.Despite recognition of the value of research-based learning, many teachers find it challenging to implement, particularly in regards to incorporating technology into the classroom. One of the biggest challenges is understanding how technology can improve student learning, not the technology itself.The use of smart technologies in math lessons has been found to optimize the teacher's work and motivate students. In the modern age, managing a classroom where each student requires special attention has become increasingly difficult for teachers. The appropriate use of gadgets, various websites, and games in the classroom can optimize the teacher's work and facilitate the task. In our study, due to limited opportunities and according to the schedule of teachers in two groups, lessons were taught by two different teachers. To obtain more reliable results for further research on the impact of technology on student learning, you can take one teacher to teach lessons in two groups. As research in this field continues to develop, it is essential to keep exploring innovative ways to improve mathematics education and equip students with critical skills for their future.

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САИНОВА, А.К.
11-СЫНЫП ОҚУШЫЛАРЫНЫҢ МАТЕМАТИКА САБАҒЫНДА ҰЛГЕРІМІН АРТТЫРУ ҮШІН ЦИФРЛЫҚ ТЕХНОЛОГИЯНЫ ҚОЛДАНУ

Бұл мақалада 11-сыныптың математика сабағында цифрлық технологияның білім сапасына әсері қарастырылған. Оқыту тәжірибесін жетілдірудегі ақпараттық-коммуникациялық технологиялардың рөлі мен оның оқушыларға әсері талданады. Мақалада осы технологияларды сауатты пайдаланудың маңыздылығы атап өтіліп, цифрлық педагогиканың ерекшеліктері айқындалған. Зерттеу эксперименталды алдын ала тестілеуден және кейінгі бақылау тобының дизайны арқылы жүргізілді , нәтижелер цифрлық технологиялар мемлекеттің білім беру үдерісінде сөзсіз маңызды рөл атқаратынын көрсетеді. Олар білім сапасының барлық көрсеткіштеріне оң әсерін тигізетін жан-жақты және толық болуына байланысты дәстүрлі білім беру түрлерімен бірге қолданылатын болады. Бұл тәсіл мұғалімдерге кәсіби іс-әрекетінің динамикасына, тиімділігіне және нәтижелілігіне қол жеткізуге көмектеседі.

Түйін сөздер: білім беру, цифрлық технология, цифрлық педагогика, оқу процесі, оқыту, математика.

САИНОВА, А.К.
ИСПОЛЬЗОВАНИЕ ЦИФРОВЫХ ТЕХНОЛОГИЙ ДЛЯ ПОВЫШЕНИЯ УСПЕВАЕМОСТИ УЧАЩИХСЯ 11-Х КЛАССОВ МО МАТЕМАТИКЕ

В статье исследуется влияние цифровых технологий на качество обучения на уроках математики в 11 классе. В нем анализируется роль информационных и коммуникационных технологий в совершенствовании практики преподавания и их влияние на студентов. В статье подчеркивается важность грамотного использования этих технологий и выявляется специфика цифровой педагогики. Исследование проводилось посредством экспериментального претестового и посттестового контрольного группового дизайна, и его результаты свидетельствуют о том, что цифровые технологии, несомненно, сыграют значительную роль в образовательном процессе государства. Они будут использоваться совместно с традиционными формами обучения в силу их разностороннего и комплексного характера, положительно влияющего на все показатели качества образования. Такой подход поможет учителям добиться динамики, эффективности и результативности своей профессиональной деятельности.

Ключевые слова: образование, цифровые технологии, цифровая педагогика, образовательный процесс, обучение, математика.