МАТЕМАТИКА — ЭТО ВЕСЕЛО?

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Аннотация. В статье обсуждаются причины необходимости применения игр в преподавании математики. Это исследование носит описательный характер, его результаты предлагают некоторые практические решения, которые могут быть применены в преподавании.

Ключевые слова. Онлайн-обучение, игры, интерактивные подходы в преподавании.

MATEMATIKA QIZIQARLIMI?

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Izoh. Maqolada matematikani o'qitishda o'yinlardan foydalanish zarurati sabablari muhokama qilinadi. Ushbu tadqiqot tavsifiy bo'lib, uning natijalari o'qitishda qo'llanilishi mumkin bo'lgan ba'zi amaliy echimlarni taklif qiladi.

Kalit so'zlar. Onlayn ta'lim, o'yinlar, o'qitishning interfaol yondashuvlari.

IS MATH FUN?

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Annotation. The article discusses the reasons for the need to use games in teaching mathematics. This study is descriptive and its results suggest some practical solutions that can be applied in teaching.

Keywords. Online learning, games, interactive teaching approaches.

Introduction. Educators and educational institutions are divided on how to best incorporate emerging technologies and methodologies into the classroom. Gaming in education may be seen as an obstacle to learning; however, the purpose of gaming in education is to increase students' motivation and engagement, improve students' visual skills, improve students' interaction and collaboration abilities with their peers, and enable students to apply gaming values to real-world situations. Since the first wave of the COVID 19 lockdown, there has been an intensive use of educational technology to

simplify and improve learning. However, this does not immediately influence student achievement because in order for technological tools to be effective, they must be aligned with the curriculum. This research investigates the implementation and use of gaming apps within an online instructional setting.

Literature review. Gaming is known to require its participants to abide by a set of established guidelines. (Houghton, 2013) asserts that educational games are used to assist in the process of teaching and learning. Games can be used as a supplementary tool to augment conventional teaching techniques in order to enhance the learning experience for students and teach additional skills such as rule-following, adaptability, problem-solving, interaction, critical thinking, creativity, collaboration, and good sportsmanship. Games can be used as a supplemental tool to augment conventional teaching techniques in order to enhance the learning experience for students. The process of learning should not be tedious, and it shouldn't consist only of memorization drills in which students are required to learn knowledge off by heart in preparation for exams. Learning that is improved by technology may bring a sense of vibrancy and creative thinking to the classroom, which can be beneficial to instructors as they work to improve student accomplishment.

A wide range of educational game formats are used and utilized by instructional institutions, schools, and families alike. The fundamental purpose of employing games in the classroom is to assist students enhance their critical thinking skills while teaching a specific topic by pushing them to think creatively while keeping to the rules. Other games are available that are dedicated to boosting knowledge in a single topic, and the most well-liked of these are math games. According to (Yue, & Zin, 2009), although games like chess assist players enhance their thinking skills and other attributes required in education, they cannot be considered as educational since they do not transmit content or communicate curriculum information. Instructional games are ones that include curricular content or other instructional games.

Lengeling and Malarche (2007) describe the benefits as follows:

Affective:
- Playing games removes the emotional filters.
- They foster the use of words in a free-flowing, innovative way.
- They also develop communication abilities
- Games are enjoyable and motivating.

Cognitive: Games help learners to study.

Learning is strengthened and expanded as a result.

The focus that is placed on communicative language in games is significant.

Dynamics of Classes - Games put a lot of focus on students; the teacher only acts as an intermediary; Games promote class unity; they may boost class involvement in general; Games generate constructive rivalry; Games have students compete against one other in a friendly manner.

Adaptability:

Each of the four talents is used in these games, and the games' complexity, level, and audience may all be easily adjusted.

- Once the first development step has been completed, games need the least amount of preparation.

Teachers may be encouraged to adopt games to aid students practice language in the classroom in light of these features. Games indeed have the potential to teach, and when used well, they may even make learning fun. Going through the syllabus and completing the assigned work are still two of the most important things that

students can do to ensure that they are learning the information that is necessary for any particular course, semester, or even individual session. The games shouldn't get in the way of this at all. It is essential that they be used as a tool rather than developing a will of their own and acting independently. After the fundamental information of a given session has been provided and understood, as well as after exercises that practice and apply the new language, games may then be offered as an additional way for fostering deeper comprehension.

According to Bourgonjon and colleagues' research, educators are seen as the «real change agents» when it comes to the implementation of pedagogical strategies at educational institutions (2013, p. 30). They conducted research to see how instructors feel about the use of digital games in the classroom and discovered that almost none of the teachers had ever played digital games themselves. Even though only 9.4% of instructors actually employ video games in the classroom, 77.5% of educators feel that students may gain knowledge through playing digital games. Teachers' issues when. implementing games include lack of time, installation of the game and setting up PCs. Egenfeldt-Nielsen et al. (2011) conducted an international survey with 275 primary and middle school teachers from the United States of America, Finland, Norway, and Portugal. The teachers were asked about their experiences using games in language learning. Many of the teachers in the study said that in order for them to use games effectively, teachers need relevant training and support. According to the findings of the survey, almost sixty percent of all educators have made use of games in their classrooms. Mathe (2020, page 59) conducted a research in Sweden to investigate how instructors feel about the problems posed by digital gaming. Approximately two thirds of the lecturers had used some kind of digital gaming in their classrooms at some point in time and across a variety of topic areas. The majority of educators feel confident utilizing digital games in their lessons and are interested in incorporating them, despite the fact that many of them do not have any personal interest in gaming.

The viewpoints of 858 secondary school students towards digital gaming were investigated by Bourgonjon et al. (2010, page 1145) The use of video games in the classroom is not popular among female students, but it is among male students. The vast majority of learners think that some video games may be instructional (Bourgonjon et al., 2010, p. 1149). As a result of the fact that certain student groups do not engage in the practice of playing digital games, it is impossible to classify them as a single gaming community. In light of the results, the authors suggest implementing a variety of games into the educational setting (Bourgonjon et al., 2010, p. 1152).

Mifsud et al. (2013) investigated the attitudes of students, instructors, and parents concerning the use of video games in the classroom as well as the influence that these games have on students' ability to learn English as a second language at four secondary schools in Malta. The authors conducted a survey with students to gather information on the educational potential of digital games in the classroom as well as how students actually utilized games in the classroom (Mifsud et al., 2013, p. 37). According to the data, the vast majority of the 1,441 students (79.1%) are excited about the prospect of adopting digital games in the classroom since these games may assist them in developing their English abilities (Mifsud et al. 2013, p. 48).

Erkkila (2017) investigates the perspectives of 779 Finnish students towards digital games and what they believe they may learn from playing them for the purpose of improving their skills. The majority of the students are in the higher grade levels. Although the majority of students feel that game-acquired language enhances their performance in the classroom and makes learning simpler, there are a few students

who hold the contrary belief (Erkkila, 2017, p. 72). Playing games, according to a number of students, increased their motivation to learn. The students also said that playing games increased their excitement in learning. 592 students said that playing computer games enhanced their education at school. While 339 students said that learning via games was not very beneficial or just slightly helpful, 241 students thought that it was very helpful or a big assistance (Erkkila, 2017, p. 72).

Wiklund and Gilbert (2005) conducted interviews with a total of 21 students from Botkyrka High School. Every one of the 21 students regularly engages in gaming and has the conviction that they can teach themselves via computer games without the assistance of an instructor. Students have the notion that playing digital games might help them better comprehend curricular material (Wiklund & Glimbert, 2005, p. 1).

The effectiveness of educational games relies heavily on engagement as well as learning. Groff et al. (2012) examines the role of video gaming in schools in comparison to other activities. Both the students and the teachers agreed that the game was more fascinating and motivational than the methods that had been used before (Marklund, 2015, p. 125).

According to Prensky, playing digital games may provide a sense of joy, a profound and enthusiastic level of engagement, structure, motivation, learning, as well as adrenaline, creativity, social groups, and emotion (2007, p. 144). According to him, the reason he believes that learning via digital games is effective is because the method employs an interactive learning strategy and also adds interest. This is dependant on the learning goals that have been set. Align the content with the learner. If this is not the case, no method will result in learning (Prensky, 2007, p. 147)

Researchers Egenfeldt-Nielsen and colleagues claim that playing video games improves students' knowledge, talents, and attitudes towards the subject matter that is being taught. He believes that learning via games is a more engaging and efficient method (Egenfeldt- Nielsen et al., 2011, p. 32). Egenfeldt-Nielsen et al. (2011) conducted a survey with 275 teachers from the United States of America, Finland, Norway, and Portugal. According to the authors, just 12% of teachers see using games as a teaching strategy that has the potential to engage and motivate students (Egenfeldt-Nielsen et al., 2011, p. 193).

Yu et al. (2020, page 4) compiled a summary of the results from a variety of scholarly publications that have been subjected to peer review. Empirical studies have shown that contextual game-based learning improves students' academic performance as well as their attitudes, levels of motivation, and capacities for critical thinking, as reported by Yu et al. (2020, page 11). Students' academic performance may be improved by the use of learning strategies, such as game-based learning, collaborative learning, and context-aware learning, while playing educational games. Focus on interactions between the game, the player, and the environment to boost the educational value of games. Yu et al. and Mifsud et al. (2013) conducted research to investigate whether or not using videogames in the classroom is beneficial. When compared to the control group (CG), the experimental group (EG) demonstrated significant improvements. (Mifsud et al., 2013, p. 32). The game used in the experiment provided practice in a wide variety of secondary school language courses (Mifsud et al., p. 39). The teachers felt that the game's linguistic goals were a good fit for the English curriculum that they were teaching to their students (Mifsud et al., 2007).

Ho (2020) conducted research on Chinese university students who were studying English. Ho found that combining active learning strategies like narrative building and storytelling with digital games had a positive impact on students' ability to learn.

According to her, «behavioral, cognitive, and motivational participation» were all boosted via the use of game-based learning. Her research reveals that using video games to learn a language may increase academic interest, as well as lower levels of anxiety and unwillingness to communicate. (Ho, 2020, pp. 432-433).

Discussion and results

The given observation took place at the Westminster International University in Tashkent, at pre-university department. The department is focused on preparation of secondary school children for their further education on bachelor's level.

During the lockdown, the Pre-foundation students received their education online; hence, in order to make the lessons more interesting for the children, the instructors made use of some of the Internet tools for educational games. The following is a summary of the tools that were used effectively in order to deliver Maths in English and review the content that was presented.

1.Google forms: One of the free tools that may be used to evaluate the level of knowledge possessed by students participating in online classrooms is Google forms. It is simple to use since all that the instructor has to do is type in the questions and the answers. The remaining tasks are completed on their own automatically. When it is all said and done, and the students have turned in their answers, they will be able to acquire answers along with explanations. This makes it easier for the instructor to do their job. In addition, «Google Forms» provides the opportunity to create questionnaires, which may be used to collect feedback from students.

2.Kahoot. (https://kahoot.com)

The well-known website Kahoot is useful for studying in online classes. When searching for online classroom games, one of the most important things to consider is how easy it is to use the platform by both students and teachers. It doesn't cost anything to use the Kahoot website; all you have to do is join up to have access to more features and to connect with more learners.

When you share the screen, your students may use their phones to participate in Kahoot games. Since students will be competing against one another to win, it is an excellent tool for classroom settings. There are games for those who are just starting out, games centered on Cambridge, games with Disney or Star Wars themes, and games based on current events for more advanced students. It is suitable for users of any age or skill level. Students have ten, twenty, or thirty seconds to respond to each multiple-choice question, which makes it an effective method for students to review a subject and evaluate their level of comprehension. This is a great way to get students familiar with a new topic while also testing their existing knowledge.

While it is generally agreed that playing games is an effective way to teach students new information, the process of organizing and supervising these activities may take a significant amount of time and energy on the part of the teacher. In addition, the vast majority of students take pleasure in participating in competitive gaming. There is also a subgroup of students who, while playing games, experience feelings of inadequacy since they are pitted against powerful opponents; as a result, these students were not enthusiastic about the use of games in the classroom.

Despite the fact that there are no games included in the book, Maths teachers nevertheless make use of games in their lessons since they are aware of the positive impact that games have on their students. To summarize, playing games is an efficient way to teach, although, the fact that it requires a lot of preparation work and may be physically demanding for the teacher.

Because teaching a foreign language requires a significant investment of both

time and effort, it is something that should be given significant thought. On the basis of the findings of this survey, the following recommendations may be made:

•Teachers should pay more attention to students who are uninterested in the activity, and games should be adjusted appropriately.

•There should be additional time built into each class period for teachers to go over game tactics and finish up lesson preparations.

•Educators could sometimes organize games to be played in locations other than the classroom.

When first were exposed to Kahoot interactive testing tool, students of BaQS module on CPFS course generally had an excitement and elevated curiosity as it was some new experience for the majority of students. It was observed students, even those who have previously experienced lack of concentration at times, were generally much more focused on the topic that was incorporated into the game. The game itself was presented in the form of multiple-choice questions, with an abundance of some pop culture references such that students could relate to it to greater extent. Students generally feel a lot more comfortable when math topics are translated through some pop culture references for they can feel it more appealing and friendly as opposed to having a purely scientific structures. This is largely due to the age category they fall into and the fact that it is important to remain focused to understand math topics, which is easier to achieve when there are some familiar references they can connect to.

The structure of the games played were such that students had to organize themselves into small groups of three, name those groups, and then answer math questions within time bounds. While doing that they had to keep in mind the fact that they were competing against others as well as the fact that the faster they give the correct answer the more scores they were awarded. Accuracy and speed were essential in getting to the top of the ranks and students found it both exciting and stimulating.

Such structure has brought about the competitive spirits which, in turn, have triggered the process of accessing some relevant information from past topics. Normally, students tend to demonstrate a certain reluctance in having to constantly refresh their memories about previous topics. However, due to their natural competitive spirits that the game triggered, students were eagerly attempting to remember some previously studied concepts, and were doing that quite effectively. This interactive experience greatly contributed to students' realization of the importance of repetition and refreshment of previously obtained knowledge, which was a great achievement in that regard.

After being exposed to such mode of teaching, students have quickly gotten use to a 'fun' part about their regular math classes and started to express a great deal of curiosity and excitement towards the next such opportunity. While knowing that it awaits them and soon will be played again, students have demonstrated a stronger desire to understand topics and started to address questions about some math concepts they have studied previously and had imperfect grasp on. Students were eager to outsmart their fellow classmates from other teams as the tool accumulates scores and every time it was played students were ever more prepared and were trying to answer given question as fast as they could.

Those quizzes were made of a series of questions from previous and current to that time questions. They were mixed up with jokes and funny hints, which has also greatly contributed to authenticity of the process and have peaked students' interests even more.
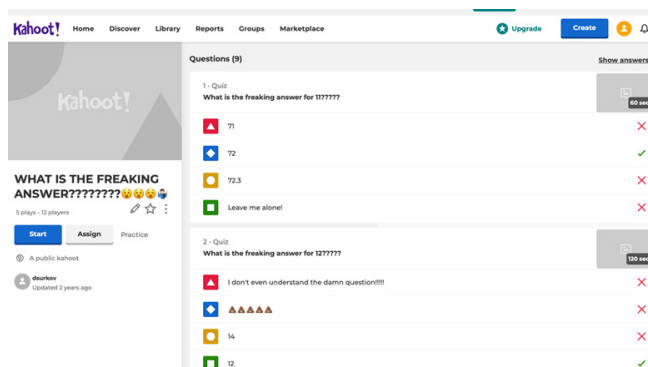
Conclusion and recommendations. There are some areas aspects that are necessary to consider and to be careful with. It is extremely important to understand students well and to stay aware and supportive of those students who tend to be shyer than the others. This is important because when playing such games in groups some students tend to bow out and are left outside of the heated discussions while trying to solve questions form a quiz. It was observed that there was always a leader within those small groups, who dominates the whole process and sometimes aggressively so. While this is generally beneficial for leading students taking the initiatives and responsibility for the group, but is not so much for those why are left out for the lack of assertiveness in character. It is very important to be aware of such situations and facilitate a healthy atmosphere, where, ideally, everyone is involved in the discussion process and decision making is made in turns. Also, if the total number of students is not big, it is a good idea sometimes to run this game on the individual participant basis, where there are no groups, but every single player is a decision maker for themselves.

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