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A. Dauletkulova¹ (orcid - 0000-0001-5162-5367)
A.K. Gabdullina², A. Argymbayeva², N.S. Begegov²

¹PhD, Professor assistant, ²Master student
Suleyman Demirel University, Kaskelen, Kazakhstan

THE FEATURES OF USING SMART TECHNOLOGIES FOR ONLINE EDUCATION

Abstract. This article discusses ways to provide quality education and increase students' interest in the subject using SMART technologies in the teaching of mathematics online. In addition, this article is a guide to the features of the effective use of Geogebra, IXL (I excel) curricula, which are effective in teaching mathematics online.

One of the main goals of education today is to update the content of education through new SMART technologies. We all know that by the decision of the United Nations, the XXI century is called the century of information. Therefore, quality education today requires the widespread use of new methods and online platforms in the organization of students' work, informatization of education.

The use of new technologies in the educational process inevitably leads to an increase in the quality of education, so the use of new technologies by every teacher is a requirement of life. Smart technologies are information processing tools. Demonstration, explanation, training, correction and assessment can be performed in mathematics lessons using the capabilities of SMART technologies. It is obvious that a mathematics teacher aims to achieve certain results in pedagogical work, to effectively use SMART technologies in teaching mathematics and to achieve quality education.

In the current pandemic situation, it is a great task for educational institutions not to reduce the level of education, not to lose the interest of students. Therefore, the article will consider ways to use online learning through online platforms.

Keywords: Geogebra, IXL (I excel) Learning, SMART technologies, online education, teaching mathematics.

Introduction. In this modern century, the main goal of the education sector is to update the content of the education system via new information technologies. The quality of education currently requires the widespread use of new methods and new technologies in the organization of students' work aka informatization of the education system. The use of new pedagogical technologies in the educational process inevitably leads to an increase in the quality of knowledge, so using the new technologies by teachers is a requirement of our century. One of the valuable problems is the education of the individual in the direction in which each of the students realizes and improves their abilities and character. One of the main subjects in the secondary school curriculum is mathematics. Mathematical science is one of the most widely developed sciences. Therefore, to implement the disclosure of the content of teaching mathematics, there is a need for new SMART technology tools. Using the advanced achievements of modern information technologies in mathematics lessons, you can develop students' knowledge by organizing cognitive activities.

One of the most important pedagogical tasks of a school teacher, along with understanding the purpose of teaching, is the methods and the result of its practical implementation. One of the most important tasks of a school math teacher is the development of algorithmic thinking. Each person, each student, thinks differently, which means that there are several types of thinking. Rational thinking, the use of

mathematical formulas, the formation of other concepts by logical thinking from one concept (i.e., the formation of other concepts). a new theorem from axioms and previously proven theorems) develops logic and mathematical (logical and mathematical) thinking. At the moment, every modern school is equipped with electronic types of equipment, as well as a special type of book – electronic textbooks. It ensures that the future teacher of mathematics is obliged to use SMART technologies and various computer programs of dynamic mathematics in the teaching process. The computer programs GeoGebra and IXL (I excel) Learning, which will be discussed in this article.

Nowadays, one of the most effective concepts of the discipline for the younger generation is the ability to apply the basics of new information technologies. With the help of such SMART technologies, you can adjust the student's response, specify the ways to complete a given task, and teach the student to fully express their thoughts in order. It is proved that with the active use of SMART technologies, students' level of self-education increases, motivation and cognitive interest in learning increases, and also contributes to the qualitative assimilation of new material due to visibility. Hence the relevance of our work. In this article, we will focus on the features of the use of SMART technologies in teaching mathematics, including computer programs GeoGebra, IXL (I excel) Learning. Since, due to the current pandemic situation, almost all students are taught remotely, in this article we will consider how, with the help of new SMART technologies, rational approaches to online learning can be used to prevent a decrease in the level of knowledge of students and so that students do not lose interest in classes.

Distance learning is one of the forms of the system of continuing education that implements the human rights to education and information, allowing specialists to improve their skills, performing the main function. The significance of distance learning for us is to increase the level of knowledge of students through the creation of a unified information system of education. In addition, if we open up access to the world information space, increase the scientific and creative research of students, open up interest in obtaining knowledge, and prepare an educated generation.

The main idea of educational platforms is Geogebra and IXL Learning. The COVID-19 pandemic has changed education forever. However, the pandemic has forced people to think outside the box, and it's shown that students can learn in their own time without falling behind. A well-designed online learning environment can give you the opportunity to do individualized learning well. People can work at different paces. Also, the other thing they can do is work together and collaborate. This is a time to embrace technology. And now, we will speak about this kind of technology - GeoGebra.

GeoGebra is made of two words “Geometry and Algebra”. GeoGebra is a simple but powerful tool that can be used by students to understand math concepts, to help solve problems, and to check solutions. GeoGebra has become the leading provider of dynamic mathematics software, supporting science, technology, engineering, and mathematics (STEM) education and innovations in teaching and learning worldwide.

The main idea of using GeoGebra in everyday teaching and learning is to provide opportunities for students of different mathematical skills and levels for better understanding concepts and fostering them to do mathematics in a new attractive way.

Here are the main features of Geogebra:

- free for non-commercial use;
- multiplatform;
- clear and easy understanding the graphical user interface;
- rich database of ready-made examples;
- technical documentation in many languages;
- marking objects follow the mathematical syntax;
- ability to save a project in multiple formats;
- works with LaTeX;
- all objects in GeoGebra are dynamic;
- possibility to publish the work on the website through javascript;
- the program is translated into many foreign languages.

All this makes GeoGebra a great tool for teaching and learning mathematics. Since all objects in GeoGebra are dynamic, students can see how it's changing when they change the parameters of the problem. In geometrical constructions, all the objects such as points, sections, circles and lines can be moved in any way. This makes the constructions clearer. In addition, all the constructions can be made by the point and click technique or by introducing them through the command line.

Undoubtedly, homework and additional practical tasks are very important at the stage of consolidation of the acquired knowledge. There are effective applications in online learning that help you monitor students' performance of similar tasks. In particular, At its core, IXL is a platform that has made innovative education a top priority.

Whenever a student hits one of those challenging concepts and is ready to throw in the towel, that's when we need a good motivator to help them master it. IXL Learning is a comprehensive curriculum that not only provides a unique immersive learning experience but also boosts motivation through online awards, stickers, and certificates for each subject. This added motivation is one of the things that keeps students engaged and seeing results. And also for the teacher, it is an indispensable tool for determining and analyzing the level of performance of the child, whether he has mastered the topic.

Advantages of using IXL Learning:

1. Comprehensive Curriculum
 - IXL offers comprehensive coverage of pre-K through 12th grade curriculum, with more than 8,000 skills aligned to the Common Core and all state standards.
 - Each IXL skill automatically differentiates learning by generating questions based on students' understanding of the material.
2. Real-Time Diagnostic
 - The IXL Real-Time Diagnostic assesses students at a deep level, providing reliable insights on students' grade level proficiency on key math strands.
 - With this portrait of student knowledge always in hand, teachers can make smarter decisions about how to reach every student where they are.
3. Personalized Guidance
 - IXL uses insights from student work in the curriculum and the Real-Time Diagnostic to power personalized guidance for every learner.
 - IXL's personalized action plans seamlessly link students to the skills that will help them build on their current knowledge as well as remediate any gaps in understanding.
4. IXL Analytics
 - IXL Analytics is an essential daily tool that helps teachers deliver data-

driven instruction and support every student at the right level.

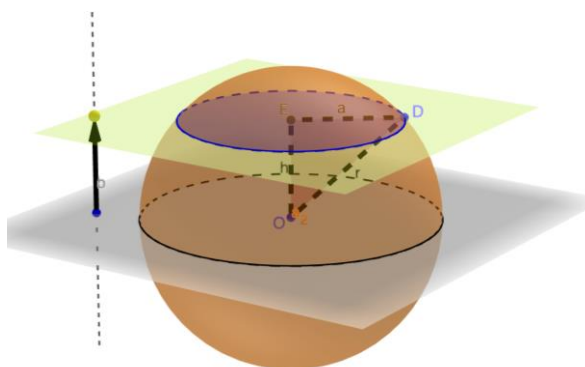
- Analytics uncovers insights that help teachers use their limited class time more effectively, respond to individual needs quicker, and ultimately make better instructional decisions every day.

The features of using Geogebra and IXL for online education. GeoGebra has a very clear and intuitive interface divided into parts corresponding to algebra and geometry. Depending on your needs it can be freely modified to suit the considered issue.

We have several views:

- algebraic view;
- geometric view;
- spreadsheet view;
- CAS (Computer Algebra System) view;
- protocol design view;
- command line.

All these views are linked with each other, that is, if we introduce an object in one of the views, it will appear in others in an appropriate form. So for example, if we put a function in a command line, its graph appears in a geometric view.



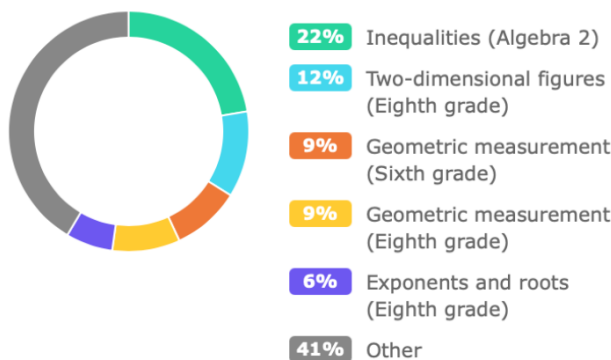
All the changes of the parameters of the function are immediately shown on the graph.

Besides the basic capabilities of GeoGebra like drawing figures, lines and function graphs we can also calculate or measure angles, points of interceptions, lengths, fields, circumferences, maximum and minimum of a function, derivatives and integrals.

Obviously, GeoGebra can be used as an advanced calculator but not only. It can operate on vectors, matrices and even solve a system of linear equations.

On IXL Learning platform, there are many sections that help the teacher to monitor students/ performance:

PRACTICE BY CATEGORY



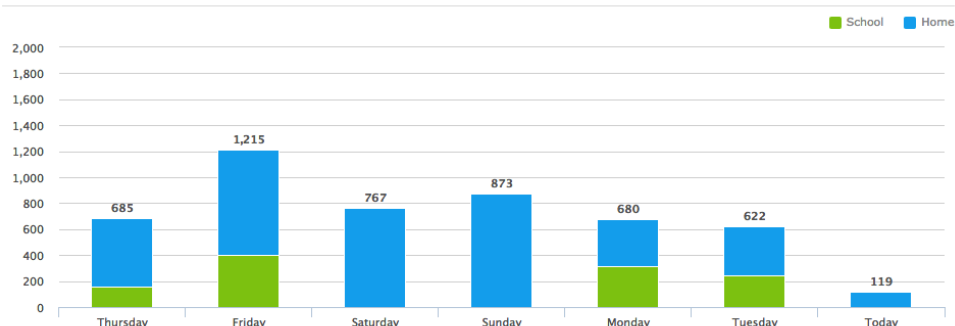
- Analytics;
- Recommendation s;
- Students Quickview;
- Progress and Growth, and etc.

The section “Analytics” comes with every account and provides detailed real-time standards reporting and how students are progressing in each area(Picture-1,2). Teachers will get a birds-eye view of

the areas of students are excelling in and where he or she falls short.

Teachers will receive further recommendations on areas students should focus on to improve his or her comprehension. For each day the student used IXL, the teacher can see which sections and even which questions he or she answered and how many he or she got right and wrong. And it makes it easier to identify problem spots as well as students' progress on all standards he or she worked on. At any time, a teacher can dig into the details of a student to better understand where there is misalignment.

Questions answered - Last 7 days



The section "Recommendations" recommends areas of a further study based on students' progress on IXL. And recommendations will be relevant to what the student has been studying or areas where the student has been struggling.

Researching Results. Research participants are school teachers, who used online platforms in their lessons. A total of 29 (42.6%) males and 39 (57.4%) females participated in this survey, aged between 21 and 40 years old. Teachers' use of online platforms was measured in the table shown below. In order to facilitate the presentation and discussions of the results, the percentage of respondents' agreement level will be presented as SD (Strongly Disagree), D (Disagree), N (Neutral), A (Agree) and SA (Strongly Agree). The teachers stated their preferences from five choices with the respective scoring – 1 point (SD), 2 points (D), 3 points (N), 4 points (A), and 5 points (SA).

Table-1. Percentages and Means of Items on Online Teaching-Learning Process by Using Overall Mean = 3.73

Items	SD %	D %	N %	A %	SA %	Mean
1. It is easier to make smarter decisions about how to reach every student where they are by using Online platforms	- (0)	5.9 (4)	17.6 (12)	47.1 (32)	29.4 (20)	4.00
2. Online platforms help you to deliver data-driven instruction and support every student at the right level.	4.4 (3)	10.3 (7)	32.4 (22)	33.8 (23)	19.1 (13)	3.53
3. I feel efficient in using Online	-	7.4	26.4	45.6	20.6	3.79

platforms	(0)	(5)	(18)	(31)	(14)	
4. Online platforms make it easier to manage students' performance	- (0)	5.9 (4)	13.2 (9)	54.4 (37)	26.4 (18)	4.01
5. Online platforms give the opportunity to use lesson time effectively	2.9 (2)	7.4 (5)	57.4 (39)	20.6 (14)	11.8 (8)	3.31

Table 1 outlined the percentages of items on managing students' level by using IXL Learning. Three items of five scored above the overall mean, remain two items are very close to the overall mean ($M=3.73$). As such, the highest mean score was from the item "Online platforms make it easier to manage students' performance" ($M=4.01$). The item "Online platforms give the opportunity to use lesson time effectively" scored the lowest among all ($M=3.31$).

Conclusion. In this article, we show the benefits of implementing dynamic mathematical software in the teaching and learning process. It has been shown that the program gives students many opportunities to form an intuitive sense and visualize adequate mathematical processes. It can also be said that all students with any level of mathematical knowledge can be encouraged to study mathematics through these programs. We also conducted research among teachers so that they could work on this online platform and give their feedback. The results of this study show that using the online platform had educational value when teaching math, for example, made it easier to understand in which areas students excel and where they fail, and in some cases improved student performance. Current trends in science teaching require the use of visualization techniques, and GeoGebra and IXL (I excel) Learning fit perfectly into this trend.

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А. Даулеткулова, А. Габдуллина, А. Арғымбаева, Н. Бегенов

Сүлейман Демирел университеті, Қаскелең қ., Қазақстан

ОНЛАЙН БІЛІМ БЕРУ БАРЫСЫНДА SMART ТЕХНОЛОГИЯЛАРДЫ ҚОЛДАНУ ЕРЕКШЕЛІКТЕРІ

Аңдатпа. Мақалада математика пәнін оқытуда онлайн платформаларды пайдалана отырып, сапалы білім беру және оқушылардың пәнге қызығушылығын арттыру жолдары қарастырылған. Сонымен қатар, бұл мақалада математика пәнін онлайн оқытуда тиімді болып табылатын Geogebra, IXL(I excel) оқыту программаларын тиімді пайдаланудың ерекшеліктерін қарастырылатын болады.

Қазіргі таңда білім саласының қызметкерлерінің алдында тұрған басты мақсаттардың бірі – жана smart технологиялар арқылы білім мазмұнын жаңарту. Біріккен Ұлттар ұйымының шешімімен «XXI ғасыр – ақпараттандыру ғасыры» деп аталғандығы бәрімізге мәлім. Сол себепті сапалы білім беру қазіргі уақытта, білім алушылардың жұмысын ұйымдастыруда жаңа әдістер мен онлайн платформаларды кеңінен пайдалануды, білім беруді ақпараттандыруды талап етеді.

Оқу-тәрбие үрдісінде жаңа технологияларды пайдалану сөзсіз білім сапасының артуына алып келеді, сондықтан жаңа технологияны әрбір ұстаздың пайдалануы - өмір талабы десек те болады. Smart технологиялар – ақпаратты өңдеу құралы. Smart технологиялардың мүмкіндіктерін пайдалана отырып математика сабағында көрсету, түсіндіру, жаттықтыру, түзету және бағалауды жүзеге асыруға болады. Математика пәні мұғалімі педагогикалық жұмыста белгілі бір нәтижеге жетуді көздеп, онлайн платформаны математика пәнін оқытуда тиімді пайдаланып, сапалы білім беруге қол жеткізуге болатындығы айқын.

Қазіргі уақыттағы пандемиялық жағдайда оқушылардың білім деңгейін төмендетіп алмау, қызығушылығын жолғалтып алмау білім мекемелерінің алдындағы үлкен міндет болып отыр. Сол себептен де мақалада онлайн платформалардың көмегімен онлайн оқытуды ұтымды пайдалану жолдары қарастырылатын болады.

Тірек сөздер: Geogebra, IXL(I excel) Learning, онлайн оқыту, онлайн платформа, математика пәнін оқыту.

А. Даулеткулова, А. Габдуллина, А. Арғымбаева, Н. Бегенов

Университет Сүлеймана Демиреля, г. Каскелен, Казахстан

ОСОБЕННОСТИ ИСПОЛЬЗОВАНИЯ SMART-ТЕХНОЛОГИЙ ДЛЯ ОНЛАЙН-ОБРАЗОВАНИЯ

Аннотация. В статье обсуждаются способы обеспечения качественного образования и повышения интереса учащихся к предмету с помощью онлайн платформ в преподавании математики. Кроме того, в данной статье рассматриваются особенности эффективного использования онлайн платформ, как Geogebra, IXL (I excel) Learning, эффективных при онлайн обучении математике.

Одна из основных целей образования сегодня - обновить содержание образования с помощью новых технологий smart. Все мы знаем, что по решению ООН XXI век назван веком информации. Поэтому качественное образование сегодня требует повсеместного использования новых методов и smart технологий в организации работы студентов, информатизации образования.

Использование новых технологий в образовательном процессе, безусловно, ведет к повышению качества обучения. Технология smart - это инструмент обработки информации. Демонстрация, объяснение, обучение, корректировка и оценка могут

выполняться на уроках математики с использованием возможностей онлайн платформ.

В нынешней ситуации пандемии перед образовательными учреждениями стоит огромная задача - повысить уровень образования обучающихся, не теряя их интерес. Поэтому в статье будут рассмотрены способы использования онлайн платформ во время онлайн обучения.

Ключевые слова: Geogebra, IXL (I excel), обучение онлайн, онлайн платформы, обучение математике.