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МЕТОДИКА ПРЕПОДАВАНИЯ МАТЕМАТИКИ

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THE ROLE OF THE ENGLISH LANGUAGE IN MATHEMATICS LEARNING

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In modern times like today, English has an important role in all aspects of life. English is one of the major international languages in the world today and the most widely used second language in the world. It is one of the official languages of the European Union and many international organizations and Commonwealth countries, as well as one of the working languages of the United Nations. Mathematics, often seen as a language of its own, is inherently intertwined with the English language. While numbers and symbols form the backbone of mathematical expressions, it is through the medium of English that concepts are articulated, problems are formulated, and solutions are communicated.

Children do not start learning math when they are first taught about numbers. Rather, math learning starts with concepts of quantity, size and comparisons, and the words that represent numbers. Math learning starts with counting physical objects with caretakers, understanding concepts of less and more or full and empty by playing with food or toys, and general ideas of mass with bigger and smaller. No more than any other language to teach or learn math. Math is a symbolic language with its own vocabulary, idioms, and grammar. It can be spoken, but you do not need "words" to express it. $2 + 2 = 4$ really needs no "word" explanation. However, $f(t) = (a_0)/2 + \sum_{n=1}^{\infty} a_n \cos((n\pi t)/L) + \sum_{n=1}^{\infty} b_n \sin((n\pi t)/L)$ might need some verbal or written word explanation. So that means we need language which helps as to build relationship between us.

Importance of English Language in Mathematics Learning

For a student learning in a language that is not his native one, the importance of English in mathematics is very high. The relationship between English and mathematics is that English has numbers and addition, subtraction, multiplication, and division. Most of the research available on the internet is in the English language. If students have a better command of the English language, they can access more resources and reference materials on the internet. Students need to learn and understand the language, but they also have to develop the habit of searching for reference materials in English. Many students face language problems while learning mathematics. Different words used in mathematics have the same meaning in English, but they have different meanings or representations in mathematics. For example, the word "actual" means true or real in English, but in mathematics, "graphics" refers to the representation of a function. These differences can confuse students. When students learn mathematics, they also need to learn the language and the different words used in mathematics. Every student has to think and understand in English. Students have to interpret problems, understand relationships, and be able to communicate the solution in English. This critical thinking process provides an important foundation for the development of

other important knowledge and reasoning skills. Students are encouraged to think effectively about their personal approaches to mathematical concepts, leading to a more effective understanding. Mathematics is an abstract and discrete subject with complex symbols and structure, but when we put mathematics in the context of real-life problems and knowledge, it increases interest in learning. Most students who are weak in mathematics find it pointless to learn the language. They find that mathematics is an extremely difficult subject and not worth spending much time and effort on. However, if the English language is integrated into the mathematics lesson, it encourages students to be confident in learning and using the words. Using language that conforms to conventions and interpretation of mathematical ideas and results from the real world. By relating to daily events and activities, as well as the knowledge derived from other subjects using the English language, the learning of mathematics seems to have much more meaning and purpose. Mathematics is not as awful as we think. English has a pre-eminent social, economic, and cultural status in the contemporary world. The English language has been the common language of the world. It has a wide range of varieties. Nearly a quarter of the world's population uses the English language. Almost every occupation and profession require a working knowledge of mathematics and the English language. A better command of the English language will not only foster curiosity and inquisitiveness but also enhance awareness and a better understanding of the world. Professional opportunities are waiting for those who are good in the English language and mathematics.

Facilitating communication and collaboration.

The English language is especially relevant to mathematics learning at a more advanced level – namely university mathematics. The central importance of language in mathematics at university level is the need for all those contributing to the subject, whether as teachers or colleagues, to communicate their ideas to others. There is a shared understanding among mathematicians that the subject only progresses through healthy collaboration and discussion about the merits of particular ways forward. However, none of this is possible if mathematicians cannot readily explain to others what they mean by a particular mathematical expression or why a potential solution to a problem might work. This always involves a deep consideration of the precise meaning and application of words as well as the more logical or structural aspects of mathematics. Such prerequisites for mathematically productive conversations demand a strong requirement for the suitable use and interpretation of language. The everyday practice confirms that a vital part of doing mathematics is having the ability to speak and to write about mathematical ideas as well as listening to others doing the same. As a result, it is perhaps not surprising that the requirements for the degree of Bachelor of Science of some of the world's leading math departments include the specification that graduates should, for example, 'demonstrate the ability to communicate mathematical ideas both orally and in writing.

Enabling access to global mathematical resources

Once learners have acquired basic skills in English, it is important to support their ongoing language development as they engage with more advanced mathematics. This article explains how the strategies and techniques commonly used in modern language teaching are now being applied to the study of mathematics. For example, working with real-world contexts and authentic language, using forms of collaborative and interactive learning, and making use of the increasing possibilities of digital technology.

There are some online systems such as the mathematics extension program NRich Mathematics developed in the University of Cambridge and the Mathematics Assessment Project developed in the USA that offer huge resources to users. However, the language of instruction in these resources is English, which means students who are not fluent in English may miss out on these valuable opportunities.

Some countries have already recognized the importance of English in the learning of mathematics. For example, the Danish education system recently introduced a requirement for students to be taught a substantial part of their mathematics and science curriculum in English, to ensure their access to global research and literature.

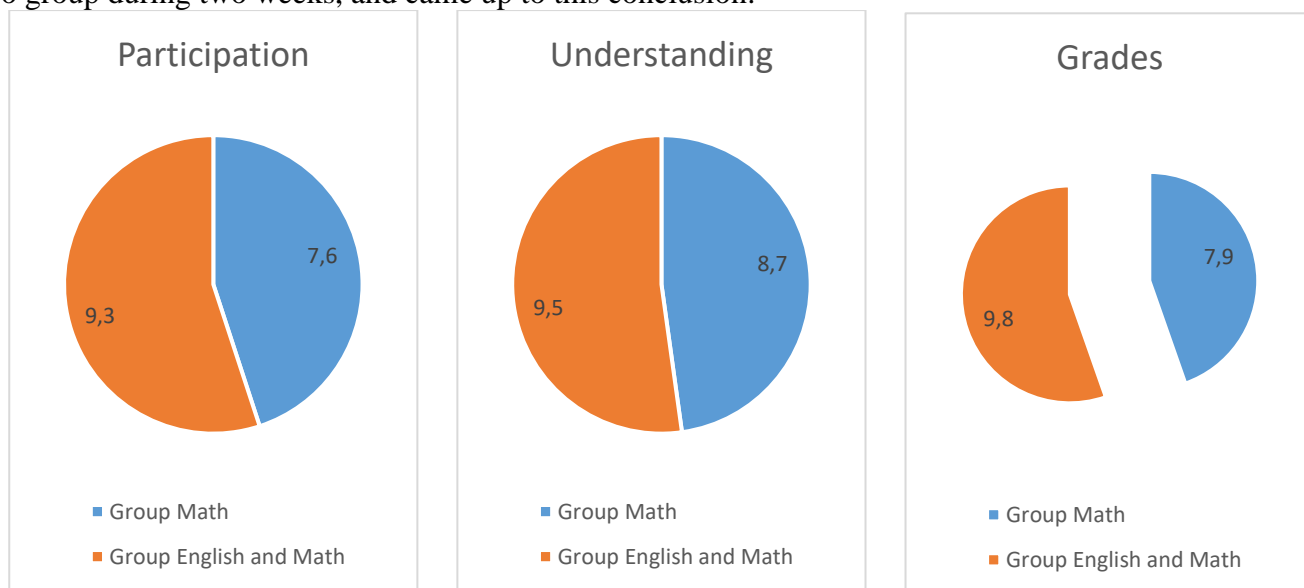
One major advantage of learning mathematics in English is that it enables students to access a large and ever-growing collection of global online resources. Many mathematical resources, such as articles, video tutorials, and software packages, are created in English and may not be translated into other languages. Being able to access and understand materials of this nature is crucial both for students looking

to pursue mathematics further and for those wishing to take advantage of the problems, examples, and inspirations widely available on the Internet.

Furthermore, there is an opportunity to raise the ranking of our country's mathematical knowledge in the world rankings. According to the annual report The Global Competitiveness Report, the World Economic Forum (WEF) collects different indicators of the world's economies and compares them with each other. One of the parameters that affects the final score of the country in this research is the level of education. In doing so, the report provides data on the quality of mathematics and science education in schools and universities around the world. And so, Kazakhstan ranks 64th out of 137 countries [5].

Although, note that studying in English also has certain disadvantages: Firstly, learning material in a non-native language poses a greater challenge for students. Processing content in English may occur at a slightly slower rate compared to their native tongue. Many research comprise that students find it harder to understand content in a second language, especially when compared to their native language. Another aspect to contemplate when learning mathematics in English is that each lexical concept forms concurrently with its condition. Mere mastery and articulation of a lexeme don't necessarily denote the completion of forming the lexical concept. The instructional approach should acknowledge that a word serves both as a representation of reality and a linguistic unit. However, advantages overweight disadvantages for many reasons. Some of these reasons include the enhanced opportunities for global communication, access to a wider range of resources and perspectives, and the development of cognitive flexibility and language skills.

Building upon this we did experiment on our groupmates, 20 students participated, 10 of them were good at English and Math (Group 2), other one were skilled at only Math (Group 1). We have monitored two group during two weeks, and came up to this conclusion:



As you see, Group 2 illustrates slightly higher figures than Group 1. It means that students mastering English and Math equally, can demonstrate “A+” results.

In essence, the symbiotic relationship between English and mathematics underscores the intrinsic connection between language and logical reasoning. In conclusion, English serves as the conduit through which mathematical ideas are expressed, interpreted, and applied, enriching the landscape of mathematical exploration and discovery. By recognizing and embracing the vital role of English in mathematics, educators and learners alike can enhance their mathematical proficiency and appreciation, unlocking the transformative power of mathematical language.

Moreover, the integration of English language skills with mathematics instruction is essential for fostering deep conceptual understanding and promoting mathematical literacy. By leveraging English language proficiency, educators scaffold mathematical learning, provide clear explanations, and facilitate meaningful discussions. This interdisciplinary approach not only enhances students' mathematical proficiency but also emphasizes the relevance of mathematical concepts in real-world contexts.

As we navigate the ever-evolving landscape of education and technology, the role of English language in mathematics remains paramount. By recognizing and embracing the symbiotic relationship between language and logical reasoning, educators and learners can unlock the transformative power of mathematical language, enriching the landscape of mathematical exploration and discovery for generations to come.

References

1. Kolkman, M. E., Kroesbergen, E. H., & Leseman, P. P. (2013). Early numerical development and the role of non-symbolic and symbolic skills // Learning and instruction, 25, 95-103.
2. Mazzocco, M. M., & Thompson, R. E. (2005). Kindergarten predictors of math learning disability // Learning Disabilities Research & Practice, 20(3), 142-155.
3. Lisa B. C. & Lisa A. J. (2020) // How do Language Skills Impact Math Learning
4. <https://www.quora.com/What-is-the-importance-of-the-English-language-in-the-teaching-of-mathematics>
<https://nonews.co/directory/lists/countries/global-competitiveness-index>

ӘОЖ 371

SAT ЖӘНЕ ҰБТ ТАПСЫРМАЛАРЫН МАТЕМАТИКАНЫ ОҚЫТУДА ҰТЫМДЫ ҚОЛДАНУ

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Аннотация

Мақалада ҰБТ және SAT сияқты стандартталған тесттерге олардың форматы мен құрылымы, тиімділігі және тест спецификацияларымен таныстыра отырып, салыстырмалы анализ жасалынады. Көптеген стандартталған тесттердің ішінде кеңінен таралғаны – SAT. Бұл көбіне Америка құрама штаттарында және әлемнің басқа да елдерінде қолданысқа ие. Стандартталған тестілеу ең мықтысын, білімді оқушыларды іріктеп алуға көмектесетін құрал болып табылады. Біздің еліміздегі Ұлттық бірыңғай тестілеудің қаншалықты тиімді екенін әлемдік стандартталған тестпен салыстыру арқылы сарапталады. PISA зерттеуіндегі статистикаға сүйеніп, Қазақстанның функционалды сауаттылығын қалай бағаланғанын және оны дамытуға бағытталған ұсыныстар көрсетіледі.

Кіріспе

Стандартталған тестілеу көптеген елдерде білім беру саласының ажырамас бір бөлігіне айналып келе жатыр. Себебі бұл оқушылардың мектепте алған білімін тексеруде және олардың жоғары оқу орнында оқуға қаншалықты дайын екенін анықтауға мүмкіндік береді. Мектеп түлектерінің әрбірі үшін ҰБТ – маңызды сынақ. Себебі олардың келесі қадамдары, әрі қарай білім алуы және мансабы осы тестке байланысты болмақ. Жалпы салыстырмалы талдау стандартталған тесттер жайлы түсінігімізді кеңейтіп, білім беру жүйесінің сапасы мен теңдігіне және өзектілігіне ықпал етеді.

Кілт сөздер: Стандартталған тестілеу, ҰБТ, SAT, салыстырмалы талдау, білім жүйесі, ұтымдылық, математика, PISA.

Негізгі бөлім

XX ғасырдың басында АҚШ-та жоғары оқу орнына түсу үшін бірқатар емтихандарды сол университеттерге барып, тапсыру керек болды. Бұл тәсіл аса тиімді бола қоймады. Себебі барлық