

IRSTI 14.25.09

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THE EFFECTS OF MOTIVATION ON STUDENT'S SCHOLARLY ACCOMPLISHMENT IN MATHEMATICS

Abstract. The main goal of this study is to explain the influence of motivation on a student's scholastic accomplishment in mathematics. Math is tough for many learners because it requires patience and perseverance. It isn't something that comes intuitively or easily to many learners; it takes a lot of effort. It is a subject that sometimes necessitates learners devoting a great deal of time and effort. As an outcome, strategies for improving student motivation throughout the teaching process are proposed in this paper. Furthermore, methods for comparing student performance before and after the class applying the recommended ways of increasing student motivation are proposed. Differentiated teaching, reinforcement, real-life problems and games are four strategies for enhancing motivation mentioned above.

Keywords: Motivation, mathematics, students, students' performance, differentiated teaching.

Introduction. Mathematics is an important subject in the learning process. In the process of learning mathematics, many factors affect student performance. One of these factors is intrinsic motivation. Many researchers who have studied student motivation have shown that there is a positive correlation between the intrinsic motivation of students and many factors, such as a career in science, mathematics, engineering, and so on [1]. It has also been shown that strengthening students' intrinsic motivation is important for endorsing equity in education. According to Fuqoha and his team who have studied students' motivation, Piaget confirmed that motivation is one of the useful methods for stimulating students' academic achievement. Fuqoha also noted that the function of motivation is to stimulate striving and success of students. Additionally, by David Morgan and MacDonald, student motivation is the change in a person's energy erstwhile to responding to the availability of target and performance [2].

Modern society is developing dynamically and this society needs a new education system. For example, one of these systems is associated with enhancing the quality of a student's learning process. For the fulfillment of such a requirement, the role of students in whom the highest motivation for educational and cognitive activities is important. Nowadays the appearance of new causes for learning and the purchase of elementary skills of self-education give personal meaning to the learning process. It should be noted that the change in the requirements for studies that appear with the transition of students from primary to basic school, an increased load in mathematics, the lack of experience, self-organization of students makes it possible to reduce the motivation of students. Therefore, proceeding from such situations, one of the research problems is the construction of students' motivation for the educational learning process. Despite the fact that learning math is not easy, intra motivated children can work hard and use strategies that will help to achieve success [3]. Students' motivation plays an important and central role in math learning and student achievement.

The famous researchers Lepper and Henderlong showed in their work that if a student is intrinsically motivated, then he persistently can spend more time on solving complex problems than other students, and he has developed self-confidence and skills that are stable for using more difficult strategies for solving complex problems [4]. The ability and difficulty of the task that people perceive are not the only factors that affect student motivation. Several studies show that perceptions of the gender relevance of math problems also affect students' motivation for learning and teaching mathematics. Despite efforts to reduce such stereotypes among people, such science-related stereotypical beliefs persist among students as well [5].

Influencing factors on a student's intrinsic motivation to learn math and solve math problems is highly dependent on the strategies and methods developed by teachers. Therefore, the experiments and works that teachers will use in the classroom plays a key role in provoking students' motivation to learn math.

Method and Methodology. Ugyen et al. proposed the following interference strategies for teaching and learning of mathematics and the strategies were altered by the way of the operation, data and condition [6]. They are reinforcement, games, real world problems in mathematics and differentiated teaching in mathematics.

Reinforcement. B.F Skinner pulled out his theory that reinforcement is the basic element of the object stimulus-response behavior, which then became broadly put in an application in teaching and learning processes. The use of reinforcement strategies during the lesson can be a motivating element to control students' attitude and improve learning results and achievements. Physical reinforcement like tokens, stickers, signs, written comments and verbal comments are the examples of the interference strategy.

Games. The inclusion of the use of games in the subject is the best way to advance students' achievement in mathematics, because students motivated learning subjects through the game. Likewise, Gallenstein also added: "Children need to be presented with situations that need to be dealt with through play and actions that challenge their minds". In this academic research were used mathematical games, board games and card games.

Real life problems in mathematics. Many learners may find math too complex, tedious and abstract without real world applications, which is why including these applications in the subject improves their performance in mathematics. Gallenstein declared the opinion "teachers need to join knowledge of natural science and mathematics with real life situations so that children value the content more". Farren also added that students became more attentive and inspired when they got instruction in how math relates to real world situations, even though this was not their most liked subject. The students were forced to represent on the day-to-day use of maths such as addition or subtraction in stores, and when adding sugar to tea by proportion.

Differentiated mathematics teaching. Grimes claims that differentiated teaching is used to satisfy the varied needs of students, which is accepted as one of the main strategies to develop stimulation and good representation of mathematics. This kind of strategy provides training for individuals or groups of learners to profit those who find mathematical concepts difficult, and those who find it easy.

The research used a modified survey questionnaire to gather data on the level of motivation of students for academic performance. Studies claim that in the majority a questionnaire or survey was used to evaluate motivation [7]. Each student is given a questionnaire with 16 questions about their motivation in mathematics learning. There is no time limit for answering the questionnaire. After

questionary students will be sorted by high, medium, and low motivation in mathematics learning. The questionnaire is developed from 3 main items, as follows: “need for activity”, “need to result”, and “need to cover learning difficulties”. For all statements, it used a 5 grade Likert-type ranging from “strongly agree” (=1) to “strongly disagree” (=5). Data from questionnaire motivation in mathematics learning then manage by searching the mean for each statement. That quantitative data will be converted to qualitative data using the following table (Table 1).

Table 1

A 5 grade Likert-type Scale

Range	Statement
$4.20 < x$	Very good
$3.4 \leq x < 4.2$	Good
$2.6 \leq x < 3.4$	Enough
$1.79 \leq x < 2.6$	Bad
$x < 1.79$	Very bad

Questions:

1. The first time I study mathematics, I believe that this is will be easy for me
2. At the beginning of mathematics lesson there is something that interests me
3. Mathematics subject are easier to understand
4. I was very satisfied with the result I got after completing homework/task/exam
5. The relationship between Mathematics subjects with my daily life is very clear
6. Getting good results in Mathematics is very important
7. As long as I pursue Mathematics lessons, I believe that I could learn the contents
8. The content of mathematics lessons fits perfectly with my interests
9. There are things that stimulate my curiosity in learning Mathematics
10. The tasks assigned by the teacher are too easy for me
11. I really enjoy learning Mathematics
12. I have learned something very interesting in Mathematics and unexpected before
13. After studying maths for a while, I am sure that I will pass the test/exam
14. Mathematics learning fits with my needs because most of the contents are already I know
15. The content of Mathematics learning will be very useful for me
16. All materials in Mathematics learning I have fully understood

This survey will be a source of information about background, experience, attitude and stimol of students on math lessons.

Conclusion. Motivation is important in determining good performance in mathematics among students through different academic achievements. The positive correlation between the results of questionnaires about motivation level

and scholastic achievement of the students can determine a beneficial impact on achieving the students' educational attainments in mathematics afterwards. Accordingly, psychological wellness of students can be reached by a motivating educational environment, which will increase the scholastic achievement of students and educational attainments in mathematics.

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Material received 24.05.22.

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МОТИВАЦИЯНЫҢ СТУДЕНТТЕРДІҢ МАТЕМАТИКА ПӘНІНДЕГІ ОҚУ ЖЕТІСТІГІНЕ ӘСЕРІ

Аннотация. Бұл зерттеудің негізгі мақсаты – оқушының математикадағы оқу жетістіктеріне мотивацияның әсерін түсіндіру. Математика көптеген оқушылар үшін қиын, өйткені ол шыдамдылық пен табандылықты қажет етеді. Бұл көптеген оқушыларға интуитивті немесе оңай келетін нәрсе емес; көп күш жұмсауды қажет етеді. Бұлкейде оқушылардан көп уақыт пен күш жұмсауды талап ететін пән. Нәтижесі ретінде осы жұмыста оқыту үдерісінде оқушылардың мотивациясын жақсарту стратегиялары ұсынылған. Сонымен қатар, оқушылардың сабаққа деген ынтасын арттырудың ұсынылған әдістерін қолдана отырып, сабаққа дейінгі және сабақтан кейінгі оқушылардың үлгерімін салыстыру әдістері ұсынылады. Саралап оқыту, бекіту, қолданбалы есептер және ойындар жоғары даайтылған мотивацияны арттырудың төрт стратегиясы болып табылады.

Тірек сөздер: мотивация, математика, оқушылар, оқушылардың үлгерімі, саралап оқыту.

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**ВЛИЯНИЕ МОТИВАЦИИ НА АКАДЕМИЧЕСКИЕ ДОСТИЖЕНИЯ
СТУДЕНТОВ ПО МАТЕМАТИКЕ**

Аннотация. Основная цель данного исследования - объяснить влияние мотивации на успеваемость учащегося по математике. Математика трудна для многих учеников, потому что требует терпения и настойчивости. Это не то, что приходит интуитивно или легко многим учащимся; это требует много усилий. Это предмет, который требует, чтобы учащиеся посвящали много времени и усилий. В этой статье предлагаются стратегии повышения мотивации студентов на протяжении всего учебного процесса. Кроме того, предложены методы сравнения успеваемости учащихся до и после занятия с применением рекомендуемых способов повышения мотивации учащихся. Дифференцированное обучение, подкрепление, задачи из реальной жизни и игры — вот четыре стратегии повышения мотивации, упомянутые выше.

Ключевые слова: мотивация, математика, учащиеся, успеваемость учащихся, дифференцированное обучение.