Proceedings of International Conference on Modern Science and Scientific Studies
Hosted online from Paris, France.
**Date:** 19th June, 2023
ISSN: 2835-3730 **Website:** econferenceseries.com

# PRINCIPLES OF LEARNING AND MOTIVATION MATH BY NON-MATH MAJOR LEARNERS

Yunusova Gulnoza Abduxalikovna
PhD., Associate Professor, Department of Natural Sciences of the Academy of the Armed Forces of the Republic of Uzbekistan
E-mail: gulnozaunusova653@gmail.com

## Abstract

In this article we discussed three research-based principles about guide effective math's teaching and learning; also providing a high-quality mathematics education for all students, cognitive tasks as judging effects of mathematical operations, understanding mathematical properties, and making connections among math concepts.

**Keywords:** Competence, framework, connect, knowledge, non-math major learners, metacognitive, learning goals, concept, strategy.

Even students are in math specialty or they are not, three research-based principles about how people learn guide effective math's teaching and learning. We are sure about following: these principles are the foundation of all process of teaching math. Making mathematics accessible to non-math major learners means, first of all, recognizing how any student learns [1].

Principle 1. Students come to the classroom with preconceptions about how the world works. If their initial understanding is not engaged, they may fail to grasp the new concepts and information that are taught, or they may learn them for purposes of a test but revert to their preconceptions outside the classroom.

*Non-math major learners, like any learners, need a way to connect what they know with what they need to learn.*

Principle 2. To develop competence in an area of inquiry, students must (a) have a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application.

*Non-math major learners, like any learners, need to learn facts and ideas and need to be able to relate and organize them conceptually [2].*

Principle 3. A metacognitive approach to instruction can help students learn to take control of their own learning by defining learning goals and monitoring their progress in achieving them.

*Non-math major learners, like any learners, benefit from reflecting on their learning goals and progress non-math major learners, unlike math major learners, will need to apply a metacognitive approach to learning math language, as well as to learning discipline - specific content - in this case, mathematics content.*

The artful teacher brings these principles to life for each student, recognizing a student's current level of knowledge and understanding and facilitating each student's growth as a self-directed learner. A respectful classroom climate is key to a teacher's success in being able to do this [1, 3]. Often a visitor can step into a classroom and feel a distinct climate, whether of respect and caring, fear of ridicule, or boredom and detachment. A positive climate is established by teacher modeling and facilitation and is sustained by student practice.

When teachers nurture a safe learning community within their classrooms, students respect each other's ideas, are patient with one another, recognize there can be multiple perspectives and ways of learning, and recognize the value of individual contributions to group learning. With their anxiety lowered, students are physiologically more able to accept new challenges and grapple with new concepts and problems [4]. Because non-math major learners can be expected to feel high levels of anxiety about all the challenges they face, it is especially important for them to feel respected by the teacher and other students, whether they are struggling to learn math or to communicate different future perspectives they may bring to discussions.

Within inclusive classrooms, educators increasingly recognize that equitable and equal are not synonymous. Widespread interest in differentiating instruction reflects the understanding that students learn in different ways. Providing a high-quality mathematics education for all students means planning and using strategies that fit diverse students. Inquiry-based mathematics education meets these goals for providing equitable access to the curriculum for all students, including non-math major learners [5].

Now we will discuss about reality situations. To introduce a math idea, the teacher poses an engaging, intellectually challenging task or problem. Students are then guided to use mathematical reasoning to reach conclusions about the task; to justify their conclusions; and to generalize about them. The teacher also instructs and help students in such cognitive tasks as judging effects of mathematical operations,

understanding mathematical properties, and making connections among math concepts [6, 7]. As part of this cognitive guidance, the teacher models math language and appropriate ways to discuss math problems. We remark that, "All our students - non-math major learners and math major learners - need to learn the language of mathematics and use that language and math models to discuss their mathematics reasoning about real problems." The development of these skills builds the base for and supports effective social learning [7, 4].

In spite of what we know about effective instructional practices, mathematics continues to be taught in some classes as it has been traditionally: As a fixed body of knowledge and set of procedures [8]. Students are asked to reproduce mathematical expressions, but are rarely expected to produce innovative solutions to mathematical problems [5]. As a result, students achieve automaticity in reproducing mathematical expressions or performing computations, but do not develop mathematical literacy.

## REFERENCES:

1. Chapin, S., & O'Connor, C. (2007). Academically productive talk: Supporting students' learning in mathematics. In W. G. Martin, M. E. Strutchens, & P. C. Elliott (Eds.), *The learning of mathematics: Sixty-ninth yearbook* (pp. 113–128). Reston, VA: National Council of Teachers of Mathematics. Boaler, J., & Humphreys, C. (2005). *Connecting mathematical ideas: Middle school video cases to support teaching and learning*. Portsmouth, NH: Heinemann.
2. Yunusova D.I., Yunusova G.A. Point-rating system for monitoring students' knowledge in pedagogical qualimetry. Educational Research in Universal Sciences, 2023, V2, №6 (Special Issue 4), P. 1038-1042.
3. Hawkins, B. (2005). Mathematics education for second language students in the mainstream classroom. In P. Richard-Amato & M.A. Snow (Eds.), *Academic success for English language learners*. New York: Longman. Padron, Y.N. (1993). Teaching and learning risks associated with limited cognitive mastery in science and mathematics for limited English proficient students. *Proceedings of the third national research symposium on LEP student issues: Focus on middle and high school issues*. (Vol. II.) Washington, DC: U.S. Department of Education, Office of Bilingual Education and Minority Languages Affairs.
4. G. Yunusova. Educational projects as a mean of a comprehensive assessment of the methodological training of future teachers. Science and innovation 2022, V1, B8. P.2448-2452.

5. G.A. Yunusova. Methods that develop the didactic structure of students' cognitive activity in three stages of a math lesson. International Journal of Pedagogics, 2023, V3, №05, P. 108-112.
6. D.I. Yunusova, G.A. Artikova. Issues of improving methodological training of teachers of mathematics. Актуальные проблемы гуманитарных и социально-экономических наук, 2019. – Т.13, №9, С. 154-157.
7. Ш.А. Пазилова. Усовершенствование преподавания дисциплины основы электротехники и электроники. Educational Research in Universal Sciences, 2022, V1, №6, P. 251-255.
8. Sh.A. Pazilova. Development of basics of electrical engineering and electronics in higher military education. Current Research Journal of Pedagogics, 2022, V 3 (04), P. 48-51.

In spite of what we know about effective instructional practices, mathematics continues to be taught in some classrooms as it has been traditionally: As a fixed body of knowledge and set of procedures. Students are asked to reproduce mathematical expressions, but are rarely expected to produce innovative solutions to mathematical problems. As a result, students achieve automaticity in reproducing mathematical expressions or performing computations, but do not develop *mathematical literacy*. Individuals are considered mathematically literate when they can use mathematics as a fully functioning member of a society.16 This includes the ability to read and understand mathematics content in newspaper articles (e.g., pie charts, line graphs, data tables, averages, percentages, and sampling error in polls) and use mathematics in everyday tasks.