Critical analysis of the factors of motivation in the learning of mathematics in Senegal

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Resumen

Está claro que, a pesar de que Senegal es uno de los pocos países que asigna una parte considerable del presupuesto operativo a la educación, el 34.4% en 2011 y el 6% en 2014, todavía hay una falta de rendimiento, lo que deja brechas considerables entre los resultados actuales obtenidos y los objetivos establecidos en el marco del PAQUET_EF (2013-2025), una situación que puede conducir, si no tenemos cuidado, a una cierta desmotivación de muchos actores y socios financieros del sistema educativo. De hecho, esta cuestión de motivación divide a los especialistas y actores del sistema. Para algunos está relacionada con los métodos de enseñanza. Para otros, está vinculado al contenido de los programas y para otros, la motivación está sujeta a las condiciones de trabajo y a la formación del profesorado. De hecho, la educación matemática se ha convertido hoy en una de las palancas más importantes en la estrategia de desarrollo socioeconómico de una nación como Senegal que enfrenta los requisitos del desarrollo nacional, de los cuales esta educación es una de las condiciones. La educación matemática es uno de los componentes más importantes del sistema educativo senegalés. Las matemáticas permiten a los alumnos resolver problemas relacionados con su vida diaria en el sentido de que se presentan como un arte, una actividad creativa, un producto de la imaginación, la belleza y la armonía. Es una disciplina que influye en la cultura porque el trabajo de matemáticas también es divertido y divertido. Pero desafortunadamente, si bien es interesante para algunos, parece difícil para otros aprender y enseñar. Esta situación está vinculada a las representaciones que los diferentes actores tienen de las matemáticas. En general, el maestro se guía por sus elecciones didácticas influenciadas por una serie de factores. Según Taurisson (1988/1995) “Los estudiantes que tienen éxito o que fracasan en matemáticas hacen gestos o comportamientos que condicionan su éxito o fracaso; pero estos gestos son a menudo invisibles y mentales. Sin embargo, conocer estos gestos de éxito permitiría al maestro ayudar el alumno en dificultad enseñándole sus propias formas de aprendizaje”.

De hecho, la preocupante cuestión de la motivación divide a especialistas y actores en el sistema educativo. Por lo tanto, es necesario realizar un estudio serio y exhaustivo para una mejor armonización de los factores clave de la motivación en el aprendizaje de las matemáticas en el nivel primario en general y en el curso medio en particular.

Palabras clave: motivación, Senegal, enseñanza de las matemáticas.

Abstract

It is clear that, despite the fact that Senegal is one of the few countries that allocate a considerable share of the operating budget to education, 34.4% in 2011 and 6% in 2014, there is still a lack of performance, which leaves considerable gaps between the current results obtained and the objectives set in the framework of the PAQUET_EF (2013-2025)[1], a situation which can lead, if we are not careful, to a certain demotivation of many actors and financial partners of the educational system. Indeed, this
question of motivation divides the specialists and actors of the system. For some it is related to teaching methods. For others, it is linked to the content of the programs and for others motivation is subject to working conditions and teacher training. Indeed, mathematics education has become today one of the most important levers in the socio-economic development strategy of a nation like Senegal facing the requirements of national development, of which this education is one of the conditions. Mathematics education is one of the most important components of the Senegalese education system. Mathematics allows learners to solve problems related to their daily lives in the sense that they present themselves as an art, a creative activity, a product of imagination, beauty and harmony. It’s a discipline that influences culture because math work is fun and fun too. But unfortunately, while interesting for some, it seems difficult for others to learn and teach. This situation is linked to the representations that the different actors have of mathematics. In general, the teacher is guided by his didactic choices influenced by a number of factors. According to Taurisson (1988/1995) “Students who succeed or who fail in mathematics make gestures or behaviors that condition their success or failure; but these gestures are often invisible and mental. However, knowing these gestures of success would enable the teacher to help the student in difficulty by teaching him his own ways of learning”.

Indeed, the worrying question of motivation divides specialists and actors in the education system. Therefore, it is necessary to conduct a serious and thorough study for a better harmonization on the key factors of the motivation in the learning of mathematics at the primary level in general and the Middle Course in particular!

Keywords: motivation, Senegal, mathematics teaching

Introduction

The international news of recent days has shown that this last millennium is characterized by a world in full mutation and traversed by crises within economic, political and social organizations. On the other hand, these changes can be obstacles in achieving performance on results. Since the school as an organization does not escape this rule; the educational community: “must be at the bedside of education and training, which is one of the factors, of the emergence of men and women. « They also do not adapt to the rush or the amateurism, they require a solid base that enjoys the consent of all actors….so it is to ensure that the school space be friendly and peaceful to allow the development of all children eager for knowledge. It is a question of building with rigor and constancy a school of the Republic in phase with our concerns, a school open to our cultures, our languages, our history. A model school that stimulates all actors and gives them the love of work well done » (PR Macky SALL 2014)[2].

For Fabien Fenouillet, in recent years the question of motivation is invoked by teachers, students but also researchers in education as one of the explanatory causes of success or failure at school. Some don’t stop criticizing them because they see it as one of the different actors in the field of education.

Findings and analysis of mathematical activities taught in the Middle Course

Regarding operative techniques
For addition and subtraction there is stability of the results (unrestrained addition of two integers or three digits), but a decrease of the results is observed when the situation becomes complicated (the restraint, several numbers, large numbers, decimals). For multiplication and division the decline systematic when there is the presence of decimals and/or the need to manage deductions.

Most self-taught students do not use interesting strategies and their problem-solving skills do not progress. But the knowledge of numbers and their operational automatisms are nevertheless necessary to solve problems. For years there has been a depreciation of knowledge about numbers and calculation practices.

But not only is this knowledge and its practices necessary to solve the problems because, as everyone agrees to have automatisms, it is possible to focus attention on the development of reasoning and overall strategies and to make the right choices to enter into the problem.

For example, drawing and drawing, which are means of representing a situation, are too often considered as procedures among others and are not used enough as keys to enter the mathematical world of numbers and operations.

Therefore if I read that there are 150 students in a school and 25 students in each class, I will have much more confidence in me to get into the calculation if I know in advance that 150 is likely to be multiple of 25 even if I do not know table 25 by heart. On the other hand, if the existence of a simple relation possible between 25 and 150 does not appear to me, to launch me in a division whose result I completely ignore will be heavier.

**Concerning the Measurement activity and the Geometric Constructions**

From the point of view of abilities, the performances and the use of the pupils in these activities are very worrying and show that the knowledge is not available in the situations where the student must take the initiative to activate them.

With the New Technologies of the Information and the Communication, the company has revolutionized its relations with the measurement and the geometry where are the calculators, the tablets and the computers that do everything in the place of the men.

More and more the Roberval balance[3] is not used as the exchange of money with the bank cards that replaced them. This is why the teaching of measurements and activities of geometric constructions must be made in context to the problems of everyday life.

For several years the inadequacy and insufficiency of curricula within schools, the pace and methods of learning of measurement and geometry have greatly impacted the motivation and results of students. But today with the (CBE) Curriculum of Basic Education which supports the triptych: integration, evaluation and remediation, with the Competence-Based Approach teachers have clear indicators that must remove all ambiguities.

**Regarding Problem solving activity**
Today we have standardized sample evaluations that make comparisons over time. But the entry assessments in the 6th year 2013-2014, as well as the assessment-assessments CM1 and CM2 give us indications: it seems that the knowledge of the tables improves as well as the success of the operations posed. For the resolution of problem we do not notice significant feedback. This is why we ask ourselves the following question: What to do to make students interested and progress?

Neverthless John Dewey said that “every lesson must be an answer”. An answer to a problem, to a void to fill, to lead to an apprenticeship. Thus, the problem solving must have for main objective to install the mathematical reasoning at the learner.

It allows the student to develop research behavior and methodological behaviors: hypothesize and test them, make and manage successive tests, develop an original solution and test its validity, argue. These activities can enrich their representation of mathematics, develop their desire to seek, their ability to resolve and trust that they can have in their own ways.

Now, just talk about the motivation.

**What is motivation?**

- On the etymological level, motivation comes from the Latin “moëre” which means to put in motion (to move, to act, to advance).

According to the Universal Dictionary:

- In the philosophical sense, Motivation is “the relation of an act to its motives.”
- At the psychological level, it is a set of conscious or unconscious factors that determine an act, a conduct.
- At the economic level, it is a set of factors determining the behavior of the individual as an economic agent, particularly as a consumer.
- Motivate = Explain, Justify reasons.
- Reasons = reason that determines or explains an act, a conduct.

For the Dictionary of French Larousse,

The motivation designates what motivates, explains justifies any action. It indicates the reasons, interests, elements which push someone in his action; does it for someone to be motivated to act. A more or less written relation of necessity established by the speaker between a linguistic sign (signifier) ??and the reality he designates (signified).

- **Psychological theories**

For them the motivation can be seen as a cycle in which thoughts dictate behavior, performance affects thoughts and the cycle begins again. Many dimensions affect each stage of the cycle ranging from
attitudes, beliefs, intentions, effort and withdrawal which can all affect a person’s motivation. Many theories of psychological ones maintain that motivation exists only within the individual,

- **Content theories**

The theory of the content of human motivation integrates the hierarchy of needs of Abraham Maslow[4] and the theory of Frederick Herzberg[5].

Maslow’s is one of the most discussed motivation theories. Abraham Maslow believed that man is naturally good and argued that people have a constantly growing inner drive that has great potential. The hierarchy of needs, devised by Abraham Maslow (1954), is a scheme commonly used to classify human motives.

Abraham H. Maslow developed the hierarchy of needs made up of five hierarchical classes. According to Maslow, people are motivated by unmet needs. The basic requirements are as follows:

- Physiology (hunger, thirst, sleep, etc.)
- Safety / security / shelter / health
- Social / Love / Friendship
- Self-esteem / recognition / achievement
- Self-realization / realization of full potential

The basic requirements are based on the first step of the pyramid: physiology. If there are shortcomings at this level, all behavior will be directed to make up for this deficit. Essentially, if you haven’t slept or eaten properly, you won’t be interested by yourself.

The second level evokes a need for security. Afterwards, the patterns move to the social sphere which is the third level. Psychological demands occupy the fourth level, while achievement occupies the top of the hierarchy.

**References**


[2] Journal Observateur (29 août 2014) n° 3281 p 8, SALL Macky is the President of the Republic of Senegal (2012 at now days)

[3] The Roberval balance with two flails is a weighing instrument that owes its name to its inventor Gilles Personne Roberval, mathematician and French physicist born in 1602, known as Roberval because he was from Roberval in the Oise.

[4] Abraham Maslow was born on 04/01/1908 in Brooklyn, New York and died on 06/08/970 in Menlo Park, California, He was a famous psychologist, considered the main founder of the humanist approach.
He is best known for his explanations about motivation based on the hierarchy of needs, which is often represented by a pyramid of needs.

Frederick Irving Herzberg was born on April 18, 1923 and died on January 19, 2000. He was an American psychologist. He was famous for introducing job enrichment and the Motivator-Hygiene theory. His publication “One More Time, How Do You Motivate Employees?” was the most requested article from the Harvard Business Review.