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Poor Academic Performance in Mathematics of Upper Basic Students

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Abstract---The research aims to study the deficiencies in the school performance in the level of learning in the students of the Upper Basic in the subject of mathematics in the Educational Unit. September 26 at the Casa Grande site in the Canuto parish, Chone canton. The application of surveys aimed at teachers and parents was used as an instrument to match criteria for the verification of situational variables that influence the teaching-learning process, in addition, the quantitative, documentary and inductive-deductive methods were used. The different assessments that determine unfavorable conditions for optimal academic development in ninth-year students in the subject of mathematics are presented. The objective was to determine what causes cause poor academic performance in students, the result was that the student's coexistence environment directly affects school performance, triggering deficiencies for poor academic performance.

Keywords---learning, mathematics, school performance, socioeconomic factors

Introduction

Learning deficiency is defined as a social problem that affects the student's emotional environment, such as family dysfunction, child labor, in addition to the negative influence of technology. The research was based on the quantitative observation of students who presented a low academic performance in the subject of mathematics, it requires special attention and dedication on the part of the student. The turning point is sought that allows the causes of this event to be observed, allowing the educational institution to apply the respective pedagogical corrections as technical assistance to parents, providing emotional support that helps contain the incidence of poor academic performance (Gumora & Arsenio, 2002; Sierzchula et al., 2014; Irawan et al., 2018).

The problem that was investigated is the poor academic performance in ninth-year students of higher basic education in the educational unit (UE) 26 de Septiembre, so that this starts from the individual's living environment in order to correct the causes that lead to it. The scenario where the research is carried out is configured in a rural environment where community family work predominates, the main activity is the extraction of cassava starch, this being the main economic source of the sector, where the majority of the students contribute with the work. The most efficient way to overcome the academic deficiency in these is to make families aware of the importance of education in their children and encourage the dosage of work allowing the young student to have fixed time for their educational work, in addition to providing information on the harmony intrafamilial healthy and compatible with the mental health of the student.

It is estimated that any type of academic deficiency that a student may present, in a subject such as mathematics, some factors that intervene can be highlighted, according to (Hunt, 2007), states that a dysfunctional home is where the inadequate or immature behavior of one of the fathers or mothers inhibits the growth of individuality and the ability to relate healthily among the members of the family, generating a heavy climate, lacking peace, understanding and love, where its members are emotionally, psychologically and spiritually ill. are affected.

In addition, another preponderant factor can also be identified, such as child labor, which is a social problem in which the integrity of children is affected, since they are deprived of their childhood and of receiving a good education, according to UNICEF. a set of basic criteria to determine if child labor is exploitative (ROSERO GOMEZ, 2014), defining that child labor is inappropriate when it is exclusively dedicated at too young an age; too many hours are spent working; causes undue physical, social or psychological stress; you work and live on the street in bad conditions; salary is inadequate; the child has to take on too much responsibility; prevents access to schooling; undermines the dignity and self-esteem of the child (such as slavery and sexual exploitation); in addition to preventing full social and psychological development.

Despite the fact that the EU is located in a rural area, the use of technologies is frequent as a means of reinforcement in the work undertaken in the subject of mathematics, being very useful in the illustrative part that the content to be taught must have, (Burbules, 2006), argue that the relationship of students with their interests and the changes detected in schools after the incorporation of mobile phones, to form part of the set of Computer and Communications Techniques (ICT) are they are integrating in the classrooms in a significant way, just like when the calculator appeared, computer labs, today there are netbooks and cell phones in schools. At present, the problems are not solved by prohibiting ICTs, pretending that they do not exist. New technologies are tools that must be integrated into today's classrooms.

Materials and Methods

The applied methodology has a qualitative approach, responds to the criteria of the variables and is also subject to a statistical process to accept or reject the hypothesis, allows to investigate, analyze and understand, from the disciplinary and didactic perspective, the reality of a group of children through their actions, thoughts and experiences, with them you can study the didactic phenomena indicates (Bernal, 2010), defines that researchers who use the qualitative method seek to understand a social situation as a whole, taking into account its properties and its dynamics. In its general form, quantitative research is based on theoretical bodies accepted by the scientific community, while qualitative research aims to conceptualize reality, based on the information obtained from the population or people studied.

Some quantitative contributions were valued as indicated by Hueso González & Cascant i Sempere (2012), based on the use of statistical techniques to know certain aspects of interest about the population that is being studied, such as the collection of information through surveys and the analysis of data. data through descriptive statistics, the study phenomenon was characterized, applying the heuristic method, in order to find and solve a problem; the inductive method, because in the course of information processing new concepts were introduced to perceive the results with a certain level of generality. The researcher sees the simplistic scenario as a generality, based on the reference framework as far as it is concerned, Tamayo (2004), the documentary method was used by reviewing texts and articles according to the subject of study (Martinez Migueles, 2004).

The population as object of study are the members of the educational community that consists of 73 people. Of which they are classified in 25 parents, 13 teachers and 35 students, of which the sample in which the investigation of 20 of the ninth year of the EU was carried out was selected. The qualitative analysis seeks to know the meaning that is immersed in the plot woven by the text or speech of the interviewed subjects. Then, it is necessary to place oneself from the point of view of the other, to work inductively from the data collected. In this way, it seeks to start from the, adding several particulars, to go to a higher level of intelligibility. However, within its very opening, qualitative design is also projected, drawing up plans and making decisions, which can be reviewed once the investigation begins. From the formulation of the problem, the search is limited to where, this is the basis for generating the design (Valles, 2000).

Analysis and Discussion of the Results

The EU, September 26 of the Casa Grande Site is in the Canuto rural parish of the Chone canton, it is involved in improving the teaching-learning process in the subject of mathematics, since the students are obtaining low levels of in their academic performance.

Academic performance

The academic performance of the students represents the performance and achievement in the teaching-learning process, which is exposed to many internal and external factors, which can favor or affect the expected school success, it is necessary to always consider the context in which students develop, their personal abilities and motivations (Mella & Ortiz, 1999). For Hernandez (1994), school performance is the cognitive level demonstrated in an area or subject, contrasted with age and academic level, it is understood that through evaluation processes it is possible to determine the student's performance; however, the simple measurement or evaluation of student performance does not, by itself, provide all the necessary guidelines for action aimed at improving educational quality. Academic performance has important characteristics, in the case of the students themselves, their abilities, vocation, previous experiences, effort and willingness to learn; however, institutions must offer training opportunities and environments, in terms of their quality and relevance to promote student performance (Aldana et al., 2010). The variables that most explain school performance are shown in figure 1.

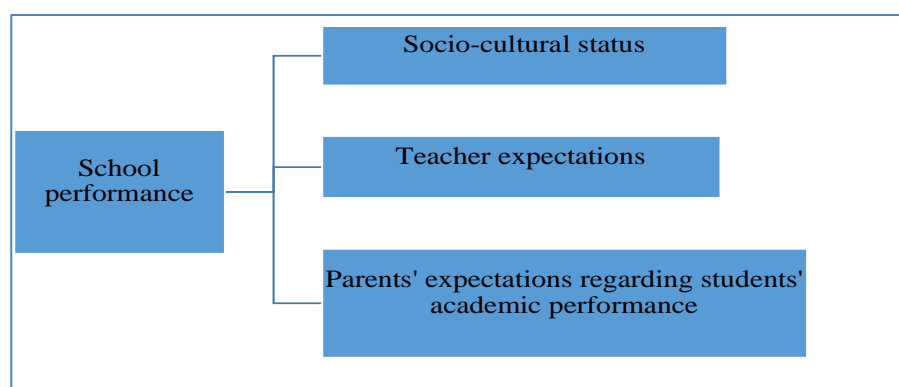


Figure 1. Variables that most explain school performance

In evaluation processes, academic performance makes learning operational. (Barbosa et al., 2008), ensure that to determine academic performance, the grades obtained by students through the different evaluations are considered, as indicators of the quality and quantity of mathematical knowledge. Grades are the school and social indicator of the level of learning achieved.

Academic performance refers to the level of knowledge in each subject, in relation to the person's age and academic degree (Hernandez, 1994). For (García, 2012), plague is usually the result obtained in the evaluation tests of the different subjects, where student learning can be evidenced and according to (Adell Cueva, 2006), it is the final product of learning. In the context of mathematics, (García et al., 2007), state that academic performance in the area of mathematics as the ability of schoolchildren to solve numerical problems and different operations that have to use the knowledge acquired.

There is a relationship with school performance predisposition towards mathematics and the environment or environment, which is manifested as school coexistence. Positive school life has a direct impact on learning, as well as situations such as bullying that negatively interfere with learning (Toledo Jofré, 2009).

Learning mathematics

Learning mathematics is essential for the personal and professional development of schoolchildren (Lamana-Selva & Peña, 2018), having the precise knowledge in this field is necessary to achieve intellectual development based on logic, abstraction, and orderly reasoning (Darlington, 2017), however, international reports on education place this type of learning as the area of study in which students obtain the lowest performance. It is the area of mathematics where traditionally there are greater difficulties in learning and more errors of a conceptual and procedural nature are made by students to achieve the objectives sought in the curricular contents; The origins of these errors come from various obstacles that can be categorized as epistemological, cognitive and didactic (Istúriz et al., 2019).

There is sufficient evidence regarding the problem of learning this subject, specifically in Ecuador it can be pointed out according to the National Institute of Educational Evaluation (INEVAL), that after evaluating the knowledge of 45,000 students in mathematics, language and literature, natural sciences and studies social, the subject is the most difficult for minors. For example, in the 4th grade of basic general education, 25% did not reach

elementary levels in this subject; in the 7th year, 30% present this tendency, while in the 3rd year of high school, 31% of those evaluated do not master numbers (INEVAL, 2015). Quality education must be a right for all individuals in a society and taken as a development model to be implemented by all regions. Educational systems have the obligation to improve the processes in which students can achieve other cognitive achievements (Krajewski & Schneider, 2009; Quyen, 2021; Meyer, 1997). The understanding of variables related to academic success is considered an important step in improving educational results. An inquiry was carried out on the 13 teachers of the institution to find out the main causes of poor academic performance in mathematics, obtaining as a first result the subjects with the lowest performance shown in figure 2.

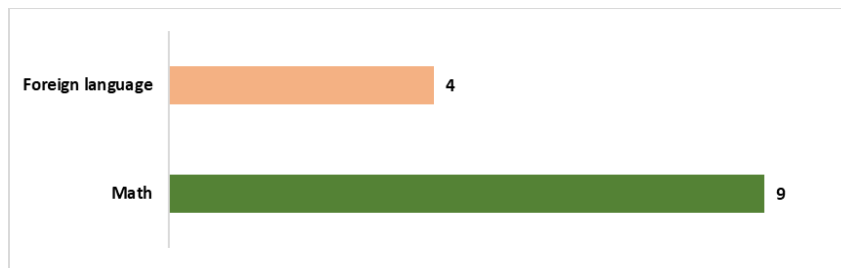


Figure 2. Subjects with academic performance lowest

According to the results obtained, almost 70% of teachers say that the area of mathematics is where there is a greater deficiency in academic performance followed by foreign language with 30%, so that, in general It is determined that the students show an insufficient level of knowledge in the development of their logical-mathematical skills. They were consulted on the causes of poor academic performance in the subject of mathematics, the results are shown in figure 3.

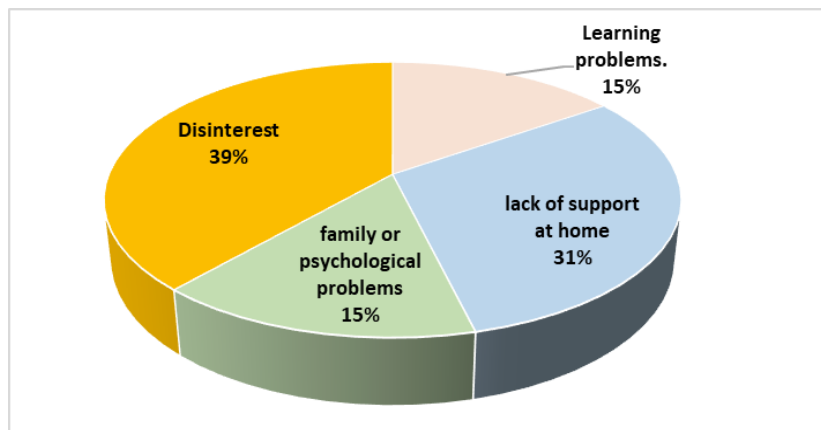


Figure 3. Causes of poor academic performance

After inquiring teachers, are several causes of poor performance in mathematics, one of the most relevant is the lack of interest of the students in the subject, which is represented by 38.47%, followed by the lack of support at home with 30.77% and with a lower percentage of 15.38% learning problems, family and psychological. Lack of interest and little or no support at home are determining factors in learning mathematics, knowing that it is a subject considered complex and that it requires a greater predisposition to achieve learning. In table 1, you can see the involvement of families in the academic performance of students in the area of mathematics

Table 1
Level of involvement of the family

Alternatives	Frequency	Percentage (%)
Regular	2	15.38
Low	7	53.84
Null	4	30.78

The level of involvement of families in the academic performance of students in mathematics is 53.84% is low and null in 30.78%, which is really worrying, because due to this lack of accompaniment at home, the disinterest of students in learning the subject arises and affects their academic performance collectively, as the percentage of mathematical deficiency is considerable. Table 2 details the results obtained from the survey addressed to the 35 ninth-year students of the upper basic to know their perspective about mathematics and the reasons that generate disinterest in it.

Table 2
How do you consider the knowledge of mathematics?

Alternatives	Frequency	Percentage (%)
A waste of time	12	34.29
Important and essential for life	7	20
Interesting but difficult	16	45.71

For students, mathematics is an interesting but difficult subject in 45.71%, for 34.29% it is a waste of time and for 20% it is important and essential for life. Consequently, most students have a negative perception of the subject and hence their lack of interest in it. It was possible to consult the reasons for disinterest in the subject of mathematics, the results obtained are shown in figure 4.

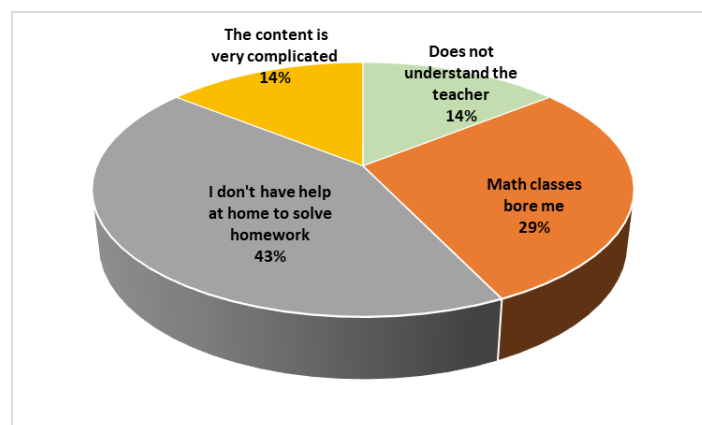


Figure 4. Disinterest in the subject of mathematics

The main cause of disinterest in mathematics is 43% because they do not have help in home to solve the tasks, followed by 29% because they assure that the subject is boring and 14% respectively because they do not understand the teacher and its contents are very complicated. Therefore, due to the lack of interest and support at home, students have difficulties in learning the subject and this in turn means that the content, despite being suitable for their curricular educational level, seems complex to them and they cannot understand the subject. teacher teaching the class (Van Ewijk & Slegers, 2010; Crawford et al., 1998; Căprioară, 2015).

Table 2 and Figure 4 show that the lack of support at home is one of the main causes of disinterest in learning in students and this in turn generates poor academic performance. This being a constant problem, which for years has not been mitigated, entrenching the erroneous idea that mathematics is difficult and predisposing the student to put a barrier in this learning. The results obtained in the research are the result of a survey addressed to the main actors of the educational task, where allusion is made to the aspects that affect the academic performance in the subject of mathematics to students of the ninth year of basic of the EU (Pierce et al., 2007; Cragg & Gilmore, 2014; O'Halloran, 2015).

Conclusions

There is poor academic performance in mathematics, it has its causes in several factors external to the institution, the predominant being the lack of accompaniment and support at home, which affects the cognitive development of students and their training as individuals in the field. academic. The lack of interest and lack of support at home are

the main causes of the low academic performance of the students in the upper basic, because they are still at an age in which they seek guidance for the development of their academic activities, and they need to feel safe in the learning process taking into account the different levels at which this situation affects the student.

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