MENDIVE

REVISTA DE EDUCACIÓN

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The teaching of fractionary numbers in sixth grade

La enseñanza de los números fraccionarios en sexto grado

O ensino dos números fracionários na sexta série

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ABSTRACT

In Primary Education, it is essential to work with skills, taking into account that knowing how to do contributes to the comprehensive training of students at this school level. In this comprehensive training, the Mathematics subject plays an important role, in particular the work with fractional numbers. That is why the main objective of this article is to socialize a system of consolidation classes on fractional numbers for sixth grade. The investigative process was carried out on a dialectical-materialist basis and methods of the theoretical and empirical level were used such as: the historical and logical, the system approach, the modeling and the documentary analysis and the pre-experiment that allowed the diagnosis of the educational reality and the elaboration of the scientific result. The practical validity of the work was evidenced, since the teaching task system contributed to the improvement of the teaching-learning process of the calculation operations of addition and subtraction of fractions in sixth grade at the Seminternado "Eduardo García Delgado".

Keywords: elementary school; adding fractions; subtracting fractions; calculation operations.

RESUMEN

En la Educación Primaria resulta imprescindible el trabajo con las habilidades, teniendo en cuenta que saber hacer contribuye a la formación integral de los estudiantes de este nivel escolar. En esta formación integral, juega un papel importante la asignatura Matemática, en particular el trabajo con los números fraccionarios. Es por ello que el objetivo principal de este artículo es: socializar un conjunto de ejercicios para las clases de consolidación, que contribuya al perfeccionamiento del proceso de enseñanza-aprendizaje de las fracciones en sexto grado en el Seminternado "Eduardo García Delgado". El proceso investigativo se realizó sobre una base dialéctico-materialista y se emplearon métodos del nivel teórico y del nivel empírico, tales como: el histórico y lógico, el enfoque de sistema, la modelación y el análisis documental y el preexperimento, los que permitieron el diagnóstico de la realidad educativa y la elaboración del resultado científico. Se evidenció la validez práctica del trabajo, ya que el conjunto de ejercicios contribuyó al perfeccionamiento del

proceso de enseñanza-aprendizaje de las operaciones de cálculo de adición y sustracción de fracciones en sexto grado en Seminternado "Eduardo García Delgado".

Palabras clave: escuela primaria; adición de fracciones; sustracción de fracciones; operaciones de cálculo.

RESUMO
No Ensino Fundamental, é essencial trabalhar com habilidades, levando em conta que saber fazer contribui para a formação integral dos alunos neste nível escolar. A Matemática desempenha um papel importante nesta formação integral, particularmente o trabalho com números fracionários. É por isso que o principal objetivo deste artigo é socializar um conjunto de exercícios para aulas de consolidação que contribuem para a melhoria do processo de ensino-aprendizagem das frações da sexta série no S/I Eduardo García Delgado. O processo de pesquisa foi realizado numa base dialético-materialista e foram utilizados métodos de nível teórico e empírico, tais como: o histórico e lógico, a abordagem sistêmica, a modelagem, a análise documental e o pré-experimento que permitiu o diagnóstico da realidade educativa e a elaboração do resultado científico. A validade prática do trabalho foi evidenciada, pois o conjunto de exercícios contribuiu para a melhoria do processo de ensino-aprendizagem das operações de adição e subtração de frações na sexta série no Seminternado Eduardo García Delgado.

Palavras-chave: escola elementar, adição de frações, subtração de frações, operações de cálculo.

INTRODUCTION

E l process Third P erfeccionamiento of the Ministry of Education has among its prospects intensify systematic work aimed at raising cognitive intellectual activity of the merely informational level to the productive, developing the students' dialectical thinking and creative that allows successfully confront them, so independent, the various challenges posed by society.

In this sense, it is the responsibility of the school, as an institution, to introduce significant modifications regarding the preparation for the life of the new generations, which are derived from the objectives of Education and from which society has set itself and which They must be dynamic like social development itself and based on the scientific study of the school reality (González, 2016).

This means perfecting the work done in school. U n essential role in this formation corresponds to primary education, educational attainment which aims to: c ontribute the formation of the personality of the school, encouraging, from the earliest grades, internalization of knowledge and value orientations that reflect gradually in their feelings, ways of thinking and behavior, in accordance with the system of values and ideals of the Socialist Revolution.

Primary education is called upon to develop in schoolchildren, not only the general skills of reading, writing and calculation as many erroneously support, it must also prepare them for a complex and prolonged study work, which means that in the initial grades schoolchildren must achieve the general and essential psychic development and a good training for the study.

In the grades of primary education, the basis of abstract theoretical thought and a series of other capacities that constitute it can emerge and form (Naranjo and Peña, 2016), which

can be achieved with the use of certain methods and procedures, since if the school masters the means and procedures of the activity, has the possibility of constructing and reconstructing their individual experience.

In this sense it plays an important role teaching m atemáticas in the Cuban school, which has the task of contributing to the preparation of learners for labor, economic and social life so that they have sound knowledge mathematical, that allow them to interpret advances in science and technology; that they are capable of operating with them with speed, rigor and accuracy, in a conscious way and that they can apply them in a creative way to the solution of problems in the different spheres of life; in addition to taking advantage of all the potentialities that this subject offers to contribute to the development of intellectual capacities and political-ideological education.

The treatment of the contents of each nucleus must be based on relationships with others; this responds to the fact that mathematical training in Cuban schools is structured in such a way that each new content complex is based on the content of previous complexes.

On the other hand, it is necessary to incorporate in the teaching - learning of Mathematics other methods that are different, attractive and that motivate the students that awaken in them feelings of curiosity, desire for divination, joy and satisfaction during the classes. In this regard, current trends in the teaching of M athematic propose the use of stories, James, riddles, photographs; little exploited resources in the Cuban school context.

In this sense, this course is one of the scientific basis for the entire process of production in developing self or planned. It is important in the fields of social life, since it allows us to prepare for life and to be able to solve everyday

problems (Guzmán, Ruiz, and Sánchez; 2021).

Aspiration in the learning process means, above all, that the student performs the work with the different operations, safely and quickly, with fractional numbers, including combined operations, prepares for the work activity and maintains a committed and responsible attitude in the face of scientific- technological problems at the national, regional and world level.

For this reason, mathematical skills, especially calculation skills, are of great importance, above all, due to their influence on other objectives of the teaching of Mathematics. To understanding mathematical relationships is easier to achieve the better students know calculations. The ability to calculate or calculate comprises the algorithms in which relationships between numbers and/or algebraic expressions are established to produce a result (Castañeda, 2016).

The construction of a new numerical domain was introduced in fifth grade and as part of the Third Improvement of the National Education System, construction begins from third grade due to the need to expand the natural numbers (González *et al.,* 2018).

Thus arises the need to oper ar with the type of number and are introduced, then the operations of adding and subtracting fractions, where da one concrete idea about their respective meanings an d is applied to the solution of the problems typical of fractions by logical reflections (Vergara & Valdés, 2018).

With these contents it is intended that students acquire a clear understanding of the need to expand the domain of natural numbers from intra and extra-mathematical motivations, that they

know the meaning and order of fractional numbers, their different forms of representation and develop skills in calculating the four fundamental operations with these numbers in their different representations (González *et al.,* 2018).

However, according to Retana and Muñoz (2018), at the discretion of the t eachers of the primary education, methodological requirements do not correspond with the results obtained by the students, a from of that not over come the goals set in the domain of fractional
numbers, determining that some students arrive at the sixth grade insufficient domain all the fractional numbers itself.

One of the ways for students to acquire or appropriate the knowledge that is still deficient is consolidation. The essential objective of the consolidation of the mathematical contents lies in the achievement of the solidity and durability of the knowledge learned by the students, together with its rational use in the search and learning of new knowledge. The classes of: exercise, review, systematization, deepening and application are found as special forms of consolidation, each of which has its own specific objective that characterizes it (Suárez, 2014).

For this, the general objective is determined: to socialize a set of exercises for the consolidation classes that contribute to the improvement of the teaching - learning process of fractions in sixth grade in the "Eduardo García Delgado" Seminar (S/I).

MATERIALS AND METHODS

There was selected as a sample 20 sixth grade students of the S/I "Eduardo Garcia Delgado". The characteristic that distinguishes the sample is the diversity of students, who are located in the different levels of performance, according to the development of their learning in the Mathematics subject.

This empirical research was developed under a general dialectical - materialist methodological approach; In it, theoretical, empirical and statistical research methods were used that, properly combined, allowed the selection of qualitative and quantitative elements that favored the solution of the proposed tasks.

Among the theoretical methods were used: the historical-logical , to know the antecedents and development of the work with the calculation skills of addition and subtraction with fractional numbers and to systematize everything related to the treatment of skills by different authors of recognized prestige; that of theoretical
systematization , which allowed to organize knowledge based on the behavior of practice and the literature consulted, to establish relationships between these two sources of information; the system approach method , in the analysis of the results of the diagnosis of the state of the teaching learning process of calculation of addition and subtraction of fractions in the sixth grade of the S/I "Eduardo García Delgado", in the theoretical foundation of the problem investigated, as well as in the elaboration of the solution proposal.

Among the empirical methods, the documentary review was applied, which provided the necessary information on the current state of the research object, considering various authors who have worked on the topic and its results; consultation with specialists: to verify the criteria of specialists in the proposal made on the relevance, components and applicability of the proposed model and; experimental, in

its pre- experiment variant, for the practical evaluation of the proposal.

RESULTS

Among the difficulties presented are:

- Insufficient command of the knowledge that constitute preconditions for calculating with fractions.
- Low levels of learning in the calculation with fractions.
- Insufficient motivation of the students towards the exercise of the contents through the use of teaching aids.

All favored the design of a set of exercises per lessons consolidation that contributes n to the improvement of the teaching - learning fractions in the sixth grade of the S/I "Eduardo Garcia Delgado"

The set of exercises per lessons consolidation is founded on the concept developer of the teaching - learning, fulfilling the principles of teaching following: affordability; systematization; unity of theory with practice; the unity of the instructive, the affective and the developer in the personality education process; of differentiation, individualization and respect for personality and flexibility (Labarrere 2000).

This set of exercises for the consolidation classes is dynamic, as it corresponds to the diagnosis and, in turn, contains activities that can be attractive and interesting due to their close connection with aspects of the students' social life. A principle that supports this set of exercises for the consolidation classes is the linking of theory with practice.

It is intended to introduce students to the subject of fractions through the practical use of them. Prominence will be given to the student based on the fact that if the student finds itself concepts and hese settle so more durable in its logical structure.
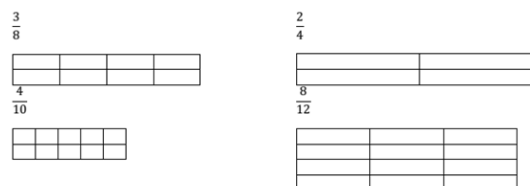
The use of the presentation of problems and exercises that exemplifies the contents to be treated, as well as the use of the computer, is significant.

Exercise 1:

Write the fraction that corresponds to the colored part of the drawing:
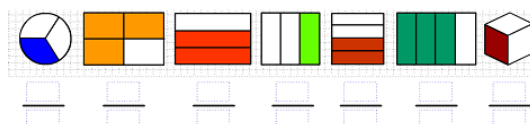
Represent the fractions that are indicated by coloring the boxes that are necessary:

Exercise 2:

Solve the following problems:

a) Diego goes to and scuela with a box 24 candies. At the end of the break, he realizes that he ate 1/6. How many candies did Diego eat during recess? How many candies are left?

b) In a campsite there are 21 0 campers, of which 3/7 are men. How many men are in the camp?

c) Alexis goes with her mother to a cafeteria in front of her school at dismissal time. There he observes that the bread with ham costs $ 20.00 and that a glass of yogurt costs $ 8.00, how much would ¼ of the glass of yogurt cost? And ¾ l bread with ham?

Exercise 3:

Find the irreducible fraction of:

$$\frac{30}{45}, \frac{20}{60}, \frac{56}{80}, \frac{45}{24}, \frac{200}{800}, \frac{300}{140}, \frac{165}{330}, \frac{140}{200}, \frac{3}{4}$$

Exercise 4:

Fig. 1- Image from satellite, September 8, 2017

Figure 1 shows the satellite image on September 8, 2017. It was recorded in the history of the hurricanes in Cuba how Hurricane Irma affected us. In addition to the economy, Hurricane Irma hit power lines, but thanks to the efforts of the people and of electrical workers was recovery in the shortest time possible; An example of this was that new poles and cables were installed in the province of Santiago de Cuba.

It considers the historic center of the City of Santiago as zero point. From this point to the Vista Alegre neighborhood, 14 poles were installed.

a) Make a chart outline wirings considering the power cord as lightning l os posts as points of the same (or affinity measuring 5 mm).

b) If you want to reinforce and place a post between the zero point and the first post at half the distance, what fraction does it represent?

c) Convert that fraction into a decimal expression.

d) Given the arrival of these phenomena, what measures does the revolutionary government adopt in order to minimize the damage that they can cause. Please refer to three of them.

e) How would you help your school to comply with these measures?

Exercises 5:

The second economic line in the Puerto Esperanza area is tobacco cultivation. The farmer Eduardo divides his plot in 5 equal parts and dedicates 3 to the planting of tobacco.

Pedro divides his into 15 equal parts. How many parts must he dedicate to planting tobacco to match his partner?

a) How do the pioneers (a) cooperate with these farmers in the FAPI?

b) Represent on the numerical ray the number of the result of the tobacco planting made by the peasants.

c) Do you think they have a good contribution to the economy? Why?

DISCUSSION

In the conceptualization of the set of exercises that contribute to the improvement of the teaching - learning process of the calculation operations of addition and subtraction of fractions in sixth grade in the S/I "Eduardo García Delgado", the exposed criteria were taken into account by Plasencia (2016), which has provided defining elements to achieve the development of skills in stud ents.

What above reveals the need for one set of activities that contribute to the eradication of such difficulties, they consider do that the set of activities is

designed on the basis of structuring logical and coherent, showing relationships between the components personal and the nonpersonal of the process of teaching - learning, to achieve the combination of instructive and educational aspects (González *et al.*, 2018).

For this reason, the proper design of the set of activities can be achieved from the unit between the set of requirements to take into account for the design of a set of activities, which are identified with the what to achieve? and the use of methods teaching, which is identified with the how to achieve it ? (Díaz *et al.*, 2018).

Given the above, the authors of this paper consider provide qualitatively new elements in the set of activities that are presented, and which provide new qualities to the addition and subtraction of fractional numbers, such as:

- This process is part of the teaching-educational process, made up of a set of activities different from those that appear in books and workbooks.
- The realization of one set of activities that respond to one con tent arithmetic, linked to practical life.
- The process is fully addressed in their integration and in its relationship with the Model Primary School from the process of teaching and learning.

The analysis performed in the present study allowed to conclude that an adequate set of activities allows the improvement of the addition and subtraction of fractional numbers in the sixth degree, a tone with the requirements of the Model current Elementary.

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Conflict of interests:

The authors declare not to have any interest conflicts.

Authors' contribution:

Wilmer Valle Castañeda: conception of the idea, general advice on the topic addressed, coordinator of authorship, literature search and review, preparation of instruments, application of instruments, compilation of information resulting from the applied instruments, statistical analysis, preparation of tables, graphs and images, preparation of database, review and final version of the article, correction of the article, revision of the applied bibliographic norm.

Juan José Álvarez Vitón: search and review of literature, preparation of instruments, application of instruments, compilation of information resulting from the applied instruments, preparation of databases, review of the applied bibliographic standard.

Claudio Camacho Calzadilla: literature search and review, application of instruments, compilation of information resulting from the applied instruments, preparation of a database.

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