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Infinite Teaching ($\mathbb{R}$) In Collection and ($\mathbb{R}^*$) By Allegory and Conformity

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Abstract*- The main purpose of this paper is to teach the infinite (∞) properties in real ($\mathbb{R}$) and expansive ($\mathbb{R}^*$) sets. Using allegory and matching. In today's advanced world, there may be more teaching methods than there are instructors. Some teaching methods are better known as the classical and modern methods. Some of these methods are more effective in basic science courses, especially mathematics, among which we can mention exploratory, discovery, and theological methods. Each of these three methods differs in the way the teacher and student interact. In the verbal method, the discovery and extraction of results is mainly done by the teacher, and the transfer of information is one-way from the teacher to the student. Proponents of this method believe that mathematics is based on logic and aims to strengthen the power of reasoning. To argue some propositions and understand some words, deductive, inductive and allegorical methods are used to facilitate and comprehend in teaching learners. Although allegory has less proving power than induction and analogy, it is more effective for adaptation and replication. What is claimed in this article is the role of allegory and conformity in teaching the word infinity (∞), and its properties in the expansive set ($\mathbb{R}^*$) There is no limit to infinity or limit to infinity. Only this article discusses the absolute infinity. Its adaptation or similarity to the sea and the desert, to facilitate teaching, which has been welcomed by learners and has been enthusiastic, has led to sustainable learning. Also, the properties of the two sets ($\mathbb{R}$) and ($\mathbb{R}^*$) are compared.*

Keywords: Set of real numbers, Expanding collection Keywords: allegory, infinity, mathematic

I. INTRODUCTION

One of the purposes of teaching, especially mathematics, is to develop in students the skills they need to solve real-life problems.

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[13] "Skills in mathematics, that is, the ability to solve problems, find proofs, critically analyze, draw conclusions, use the simplest possible teaching methods, recognize the concept of mathematics and specific situations and cases [12] and Innovations.

In fact, in creating schemas of innovations, factors such as: experience, creativity, general, specialized and strategic knowledge, application and knowledge of appropriate teaching methods, teacher skills, learner composition, gender, social environment and classroom physics, etc. . It is affect. Obviously, to succeed in this, it takes a long time for a teacher to gain the necessary experience for successful teaching, when he realizes that he is a successful teacher, when he thinks about the early years of his service, he realizes its tangible progress in various fields of education, research and teaching.

This progress is made when the teacher can use methods and techniques in presenting content that are to the satisfaction of the learners. "Successful teaching requires successful student feedback." [3]

In order for him to be able to have a lively classroom, especially in subjects such as mathematics, which are abstract and subjective, and the teacher must have the skills, expertise, techniques and various teaching methods, along with useful experiences, to understand the subject matter. To be able to understand the lessons and content well, and create an engaging class.

In this regard, a successful math teacher usually has more than one method to present a specific math subject to learners, and has access to several ways to use it to express an idea. It is often felt that the most constructive aspect of mathematics is the design and implementation of new ways, which are used to teach a particular concept or principle of mathematics.

This article refers to allegorical innovations in the math classroom to present and understand complex mathematical topics and content, specific allegorical innovations, which are presented in this article,

The presentation of various patterns is allegorical, which is the result of the author's experiences, for example, and allegories, in the remarkable structures he has used in mathematics lessons, and his very good success in explaining and comprehending the material, in terms of creating similarities and conformities. , Has acquired, and presented them in classrooms, juicy and lively, in the form of stories. Therefore, it can be stated with confidence that innovation in presenting allegories, in the success of a lesson, is the result of teaching, research and 40 years of teacher experience, and teaching. Which may be several times more effective than a teacher's explanation for understanding mathematics.

II. OBJECTIVES

2-1) Overall goal: to provide educational innovations for teaching

Minor goals:

A) Presenting allegorical innovations in teaching mathematics

B) Presenting innovations allegorically, about infinite features

c) Comparing the properties of a set of real numbers **($\mathbb{R}$)** and a set of expansive numbers ($\mathbb{R}^*$)

III. RESEARCH METHOD AND WORK METHOD

The research method is library, observations and teacher experiences.

IV. THE ROLE OF INNOVATIONS IN TEACHING METHODS

Psychologists and specialists, for different courses and their different topics, have separated different teaching methods and named each one; because factors such as personality, experience, level of awareness, literacy and even the social environment and family education of the teacher are effective in how the content is presented

Therefore, it is necessary to pay attention to these factors and reactions of students, and their growth environment, and the type of education. Therefore, in presenting new and innovative methods, the teacher must act with an appropriate mechanism, based on accurate and comprehensive knowledge of the influential factors. The invention of new methods not only helps to teach mathematics, but also creates a kind of mood, competition, and enthusiasm in teaching, the failure of which may make the work dull for the teacher. [1]

Given the special importance of using teaching methods, however, it is not possible to prescribe a special teaching method, and a stereotype for a particular subject or subject, for teachers. Although experience shows that most teachers use certain teaching methods, most of them use the same method used in the textbook. Methods can be obtained in one of two basic ways: A) the self-teacher created them. B) Follow the methods proposed by others [1]

If the teacher has enough knowledge and experience, according to the factors mentioned, he can have a successful teaching method, and following these successes, achieve educational innovations, because "the reality is that the successful use of a The new method requires practice "[2]

If he uses the methods of others, he usually relies on the methods mentioned in the textbooks. Among these teaching methods, such as classical and modern, those that are more effective in mathematics are:

Scientific (real-model) method, Socratic (question and answer), group discussion, discussion, model, metaphor, simulation, use of example, seminar, use of experiences and objective observations, individual methods, program, Units and a problem. [15]

All these methods that have been enumerated, in terms of teacher-student interaction are divided into 3 ways: a) revelatory (sensory) b) active (exploratory) and c) verbal.

A) In the revelatory method, the discovery and extraction of results is done by the teacher and the student and is a two-way communication. B) In the exploratory method (exploratory or active), the discovery and extraction of results is usually done by the student. C) In the verbal method, the discovery and extraction of results is usually done by the teacher, and the transfer of information is one-way, from the teacher to the student.

V. ARGUMENT

"Argumentation is the process by which the mind realizes from obvious affirmations to theoretical affirmations, in other words; from what he knows, he gains knowledge of what he does not know. This can be done when there is a connection between the known and the unknown. Argument is of three types: a) allegorical b) inductive, deductive "[9]

5.1. Argument in Mathematics

Proponents of this method believe that mathematics is based on logic, and its purpose is to strengthen the power of reasoning [6], which is usually presented in three ways "analogy, establishment and allegory", analogy, induction and allegory, method Are not teaching.

5.1.1. Comparison

At one time the mind came to general conclusions from general theorems, or the mind came to general theorems from less general theorems, but mathematical analogy is that, from the principles laid down at the beginning of this science, Theorems whose results are essential to those principles. In other words; the method of constructing a science by the principles of the subject is called the deductive method. Euclidean geometry is the first science that has been constructed by deductive method, analogy has its own degrees and degrees, including compound analogy. » [12].

5.1.2. Deduction

B) induction; It is an argument that the mind, relying on experience, reaches from a less general theorem to a more general theorem, that induction is complete and incomplete.

Induction is imperfect, when not all people in a whole are studied, when it is complete, which gives rise to certainty. [12] In mathematics, we usually deal with imperfect induction.

5.1.3 Induction

C) Allegory; this article discusses allegorical reasoning and allegorical innovations in mathematics. First, the lexical meaning, its conceptual and idiomatic definitions are discussed from different perspectives, then, its efficiency and relevance in mathematics are pointed out.

Tip; "In deductive reasoning, one definitely concludes about the correctness of the content. But in induction and allegory; it is not possible to complete the contents of the trust correctly, of course, the degree of correctness of the argument in induction is more than allegory.

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VI. SET OF REAL NUMBERS (ℝ) & SETS OF REAL AND EXPANSIVE NUMBERS ($\mathbb{R}^*$)

6.1. About (ℝ) and ($\mathbb{R}^*$)

Before entering into the infinite discussion. A brief mention is made of the word infinity. Consider the real line **(ℝ)**, or (⟷) or (∞ +, -∞), to facilitate many mathematical subjects, especially higher mathematics and especially analysis, a distinct douche { w_2 , w_1} , none of which they are numbers, they take, and from their or union withℝ, a set is made,(ℝ ⋃ {w₁, w₂})$\mathbb{R}^*$ = , w1 <w₂) , which is called an expansive set. [∞ +, -∞]= $\mathbb{R}^*$

The set R, with a smaller ratio (relation), is an ordered set, and (ℝ ⊆ $\mathbb{R}^*$), denote a distinct shower, w_1 and∞), (+∞) and -, with the symbols (w_2 respectively. Most learners are familiar with the properties of (ℝ). In this paper, the properties of a real device (ℝ) and the properties of an expander device ($\mathbb{R}^*$) are compared in terms of similarity and difference.

$$\begin{cases} a+b=b+a \\ a.b=b.a \end{cases}$$ relocation

$$\begin{cases} (a+b)+c=a+(b+c) \\ (ab)c=a(bc) \end{cases}$$ Shareability

$$\begin{cases} a+0=a \\ a\times 1=a \quad (a\neq 0) \end{cases}$$ Neutral

{ a(b + c) = ab + ac   Disreputability

This article discusses the concept of infinity (∞) and its properties. Enter the subject of infinity, unity in infinity, such As: $\lim_{x\to\infty}\frac{1}{x}$ Or $\lim_{x\to 0}\frac{1}{x}$ or $\lim_{x\to 2^+}\frac{5}{x-2}$, and like these, does not enter.

VII. UNDERSTANDING INFINITE FEATURES WITH SEVERAL ALLEGORIES

Step1) the researcher is standing on a bridge over the sea, holding a bucket (4 liters) of water. He decides to slowly spray the water from the bridge into the sea with his own hands. Figure (1)

Figure (1)

Question: From the point of view of people, residents around the sea, passers-by, travelers, etc. Is it noticeable that the sea water has increased a little (4 liters)?

Answer: No. So if the sea is compared to (+ ∞) or allegory or adaptation. Figure (2), Then:

Figure (2)

$$(+\infty)+a \quad =+\infty \qquad a\epsilon\ \mathbb{R} \quad :(1)$$

Step2) the same person decides to take 4 liters of water out of the sea, and take it home, to irrigate the flowers of his house with it, to see how the flowers react to the sea water? Figure (3), Then:

Figure (3)

Question: From the point of view of people, residents around the sea, passers-by, travelers, etc. Is it noticeable that the sea water has decreased a little (4 liters)?

Answer: No. Thus: The same sea is felt. In other words;

Sea water - 4 liters of water → the same sea

$$(+\ \infty) - a \quad =+\infty \qquad a\ \epsilon\ \mathbb{R} \quad : (2)$$

Step3) .The same person crossing the desert has a bucket full of dirt in the car. Decided Sprinkle it in the desert, Figure (4), Then:

Figure (4)

Question: "Can it be felt that the desert soil has increased?": Answer: No. Figure (5), Then:

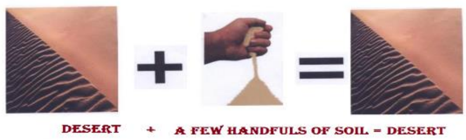

Figure (5)

So if the desert is likened to) (- ∞) , then;

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$$(-\infty) + a = -\infty \quad : a \in \mathbb{R} \qquad (3)$$

Step4). Decide to take a sack of soil from the desert, bring it home and put it in a pot, test the reaction of the flowers to grow. Figure (6) , Then:

Figure (6)

Question: From the people's point of view, is it noticeable that the desert soil has decreased?
Answer: No. Thus

$$(-\infty) - a = -\infty \quad a \in \mathbb{R} : \qquad (4)$$

Step5). Although the seas are in the same direction, do the passengers inside the plane, or the car, who are watching these few seas, do you see them as several independent seas or do they say that they see the sea? Answer: A sea, Thus : Sea+ Sea → Sea Figure (7) , Then:

Figure (7)

$$(+\infty) + (+\infty) + (+\infty) + \ldots + (+\infty) = +\infty \qquad (5)$$

Step 6) . If there are several deserts in a row, people who travel by car, train and plane. Do they see them as several independent deserts or as deserts? Answer: A desert, Figure (8) , Then:

Figure (8)

$$(-\infty) + (-\infty) + (-\infty) + \ldots + (-\infty) = -\infty \qquad (6)$$

Step 7) Question: Have you ever seen a two-story sea? Answer: No. Figure (9) , Thus:

Figure (9)

$$\frac{+\infty}{+\infty} = ? \quad : \quad \frac{Sea}{Sea} = ? \qquad (7)$$

Step 8) Question: Have you ever seen a two-story desert? Answer: No Figure (10), Then

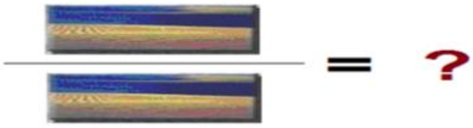

Figure (10)

$$\frac{-\infty}{-\infty} = ? \quad : \quad \frac{Desert}{Desert} = ? \qquad (8)$$

Step 9) have you seen the sea above the desert (two-story): Answer: No. Thus:

Figure (11)

$$\frac{+\infty}{-\infty} = ? \quad : \quad \frac{Sea}{Desert} = ? \qquad (9)$$

Step 10) Have you seen the desert above the sea (two-story):Thus

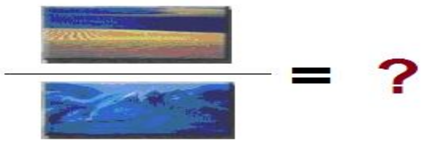

Figure (12)

$$\frac{-\infty}{+\infty} = ? \quad : \quad \frac{Desert}{Sea} = ? \qquad (10)$$

So:

Step11) Question: What happens if seawater opens up to deserts and cities and neighborhoods are abandoned? Answer: Different answers, adventurous, silent, as a result, nothing can be said

Desert + sea→? Figure (13), Then

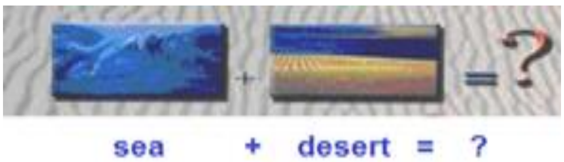

Figure (13)

$$(+\infty) + (-\infty) = ? \quad \text{Or:} \quad (-\infty) - (+\infty) = ? \qquad (11)$$

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VIII. CONCLUSION

You have seen the role of allegory and adaptation in the enduring teaching of infinite features. This type of training should also be told as a story for beginners. Because infinity (∞) is not a number, therefore, it is not a member of a set of real numbers or ($\infty \in \mathbb{R}$) . Infinity is a member of the expansive collection or ($\infty \in \mathbb{R}^*$). This is one of the important differences between the two sets. The 11 infinite properties mentioned above, some other infinite behavior, and, its characteristics are listed below

1) $(+\infty) + (+\infty) = +\infty$
2) $(+\infty)(+\infty) = +\infty$
3) $(+\infty)^n = +\infty \quad n \neq \circ$
4) $(-\infty) + (-\infty) = -\infty$
5) $(-\infty)(-\infty) = +\infty$
6) $(-\infty)(+\infty) = -\infty$
7) $(-\infty)^n = +\infty$ even :n
8) $(-\infty)^n = -\infty$ odd :n
9) $a(+\infty) = +\infty$ $a > \circ$
10) $a(+\infty) = -\infty$ $a < \circ$
11) $b(-\infty) = -\infty$ $b > \circ$
12) $b(-\infty) = +\infty$ $b < \circ$
13) $(-\infty) \times \circ = ?$ Not defined
14) $(+\infty) \times \circ = ?$ Not defined
15) $\frac{+\infty}{+\infty} = ?$ Not defined
16) $\frac{+\infty}{-\infty} = ?$ Not defined
17) $\frac{-\infty}{-\infty} = ?$ Not defined
18) $\frac{-\infty}{+\infty} = ?$ Not defined
19) $\frac{a}{+\infty} = ?$ $a \in IR$ Not defined
20) $\frac{a}{-\infty} = ?$ $a \in IR$ Not defined
21) $(\pm\infty)^{\circ} = ?$ Not defined

The distributive of the multiplication operation relative to the addition operation is not established in ($\mathbb{R}^*$).

$$(2-1) \times (+\infty) = 2(+\infty) - \infty = +\infty - \infty = ?$$

In verbal reasoning, where the teacher is usually one-way interaction with the student, the teacher with allegory, adaptation, and similarity, to facilitate proof, can easily use this method, infinite concepts and properties, and other complex mathematical problems. And it teaches other basic sciences, even the humanities, and is very efficient. Learners also understand them and this teaching is sustainable.

REFERENCES

1. Athos Bslr (1971), teaching high school mathematics teaching, Translator: J Hamadan Zadeh, , University Publication Center.
2. Bruce Joyce and Marsha Weil (1996), the new patterns of teaching, Translator :M.R Behrangi, publisher Rising
3. Einollahi AR (1998), Proceedings of the Fourth Conference on Mathematics Education.
4. EYsenck Michael.w (2000) descriptive dictionary of cognitive psychology, Translator, A,N, Kharrazi and others, Ney publication.
5. Gooya Z. et al. (1994) basic math period Undergraduate Humanities, Research and lesson planning.
6. glorious GH (1983), the teaching of arithmetic and geometry, publisher, author of the third edition.
7. Hedayatpanah , A. (2013), General Mathematics (1), publication of the Sea.
8. John A Glover and others (1997) cognitive psychology, for teachers, translation Alinaghi Kharrazi.
9. Khansarinejad M. (1983), formal logic Volumes (1) and (2Agah Publishing.
10. Moin ,M. (1983) Persian culture medium, Publishing Amirkabir.
11. Puglia George (1944), How to solve the problem? Translator, A.Aram, Universe Publishing.
12. Puglia George (1964) mathematical creations, Translator, P. Shahriari, publisher Fatemi.
13. Skarlk Keith (2000), teaching skills (mathematics education), the Translator, M. adjoining and A. Sadeghi - Press Astan Qods Razavi.
14. Shariatmadari .A (1987), Educational Psychology, published by Amirkabir.
15. Shabani Hassan (1991) skills education (teaching methods and techniques) Samt publication