Patterns, an approach to learning algebra and developing mathematical thinking in primary school in Honduras

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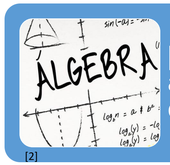
Introduction

An essential science for the human being is mathematics. It strengthens the capacity for generalization and abstraction and it's taught since early childhood. The importance of mathematics lies in the fact that it is a universal language. Therefore, this research will look at the benefits to teach patterns at an early age to learn algebra and develop mathematical thinking. There are relevant areas in mathematics which include counting techniques, logical reasoning, algorithms, probabilities, networks, and patterns. This research will focus on showing that the learning pattern process in elementary school develops mathematical learning and improves performance in algebra in Honduran children.

Honduran Education

[9] The National Academic Performance Report presented by the Ministry of Education of Honduras in 2017 mentions that the standards in math education are decreasing as the school grade increases .

[1]



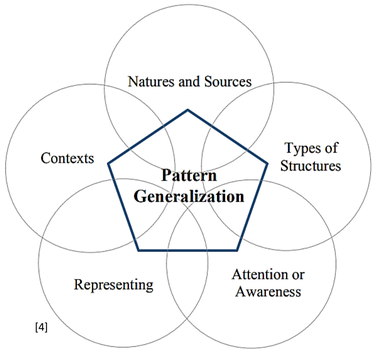
[9] From the contents related to algebra that are taught in 7th, 8th and 9th grade, none exceeds 39% of correct answers.

[2]

[8] In Honduras, all topics related to algebra are taught from seventh grade; however, other international curricula proposed that algebra should be promoted from an early age, even from preschool.

[3]

Generalizing patterns

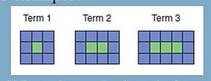


[4]

Examples

Generalizing Answers

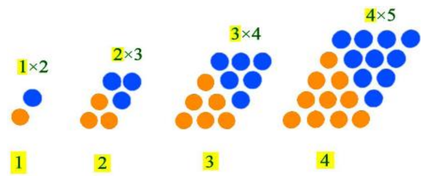
- Finding a rule that generalizes a pattern is a type of generalization.
- One of the most powerful ways to tie repeating patterns to algebra is to number the terms as you would for growing patterns.
- Then ask children questions to guide their thinking about patterns in a more general way.
  For example:



Term	1	2	3	4	5		. . .	G
Number of tiles	8	10	12	14			. . .	N

- What shape is the ninth term? The twelfth term?

[5]



[11]

Solutions

1. Provide students with verbal and graphical representations of patterns.

2. Teach the technique of generalization of patterns.

[6]

3. Develop pedagogical strategies to identify patterns in different contexts and situations. .

[7]

4. Adapt the national curricula so that patterns can be taught in elementary school as an introduction to algebra.

Proposed Methodology

- Pretest/Diagnosis
  Collection of qualitative and quantitative data
- Intervention//Five sessions
  Collection of qualitative data
- Postest
  Evaluation of procedures
- Data Analysis

References

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Johana Thomas Zapata, August 2020

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