

# International Journal of Human Sciences Research

## READING COMPREHENSION AND MATHEMATICS. TWO- SAMPLE HYPOTHESIS TEST. TECHNICAL HIGH SCHOOL CASE NO. 71

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**Abstract:** The objective of this research focuses on testing two hypotheses, the first is to prove that the average of correct answers in both subjects Reading Comprehension and Mathematics obtained by the students to whom the PLANEA 2017 exam was applied (National Plan for the Evaluation of Learning) is significantly different and a second hypothesis is that, in addition, the better the level of achievement in Reading Comprehension, the better the level of achievement in Mathematics. For the purposes of this research, the data obtained from Technical Secondary School No. 71 (Adolfo López Mateos) demonstrating that if there is a significant relationship between the levels obtained and that, in addition, the better the level in reading comprehension, the better the level will be in mathematics 46% of the time.

**Keywords:** Mathematics, Reading Comprehension, Test Statistic, Correlation Coefficient, Dependent Samples.

## INTRODUCTION

As of 2014, the PLANEA test (National Plan for the Evaluation of Learning) is applied in all the States of the Republic, on an annual basis this national test is used to evaluate students in basic education, and the last grade of education upper average in the subjects of Reading Comprehension and Mathematics In Basic Education 3rd. Secondary grade was applied with the purpose of knowing to what extent students manage to master a set of essential learning at the end of Secondary Education, in two fields of training: Reading Comprehension and Mathematics. It is important to mention that the test is aligned with the secondary education study plans and programs.

## MATERIALS AND METHODS

The focus of our research is correlational

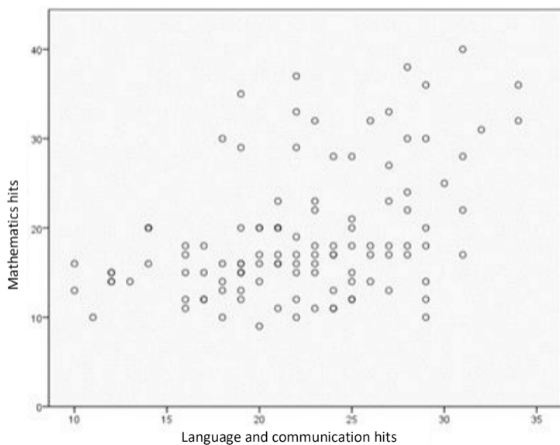
or explanatory quantitative, this type of study aims to know the relationship between two or more variables in a particular context, measures phenomena, uses statistics, hypothesis testing, does cause-effect analysis, its process is sequential, deductive, probative, analyzes objective reality, its benefits, generalization of results, control of phenomena, precision. replication and prediction. Hernandez S. Fernandez C. Bapista L. (2010). Said research firstly verifies the research hypothesis, "Hypothesis 1: The average of correct answers reached in Reading Comprehension is significantly different from the average of correct answers reached in Mathematics" to demonstrate it, the test statistic called "Paired t-Test" was applied. (Douglas, A. Lind, 2012, p. 392). Statistical approach to the null and alternative hypotheses

Calculation of the t statistic

$$t = \frac{\bar{d}}{s_d/\sqrt{n}} = \frac{3.106}{6.941/\sqrt{113}} = 4.756$$

The critical value of the "t" statistic considering a two-tailed test and degrees of freedom (df)=113-1=112 and a significance level of 5%, is 1.984, which turns out to be less than the calculated value, which is equal to 4,756 this implies making the decision to reject the null hypothesis, that is, there is a significant difference in the average number of correct answers between reading comprehension and mathematics. Subsequently, hypothesis 2 was proposed: The greater the number of correct answers in reading comprehension, the greater the number of correct answers in mathematics. The quantitative approach within his method asks for a hypothesis between the variables, but whatever his conclusions may be, they can only be valid for the observed population, in this case for the third-year students of the Escuela Secundaria Técnica No. 71 (Adolfo López Mateos), located in Colonia Valle Oriente, in the municipality of Torreón, Coahuila. The sample size was

123 students, who presented the Reading Comprehension and Mathematics test, once the data was reviewed, the sample was 113 students. The formula to calculate the Pearson correlation coefficient is given by: (Douglas, A. Lind, 2012) p.468. The first step to observe the possible relationship between the two variables Reading Comprehension and Mathematics will be to draw up your scatter diagram see Graph 1.



Graph 1. Scatterplot

It indicates a linear, positive relationship of low intensity between the variables, correct reading comprehension and correct math, it also presents a trend to the right and upwards, but in a very disperse way, the next step will be to quantify this association, for which the specialized statistical software SPSS (Statistical Package for the Social Sciences) was used, see. 22.

		Successes in language and communication	Correct in mathematics
Successes in language and communication	Pearson correlation	1	.426**
	Next (2-sided)		,000
	N	113	113
Correct in mathematics	Pearson correlation	.426**	1
	Next (2-sided)	,000	
	N	113	113

Table 1: Pearson's correlation coefficient. SPSS ver 22

Pearson's correlation ( $r$ ), is equal to 0.426 with a significance level of 0.01, bilateral, that is, with 99% confidence and a margin of error less than 1%, this indicates that the relationship between the variables is a medium positive correlation, in other words it means that the reading comprehension and math variables are related by 0.426, out of a possible 1.

## RESULTS

From hypothesis 1: it is concluded that we accept the research hypothesis, that is, there is a significant difference in the average of correct answers between reading comprehension and mathematics. Regarding hypothesis 2, we also accept the research hypothesis, at a confidence level of 95%. Mathematics teaching must be based on understanding, and word problems must constitute meaningful contexts for children, in which it is necessary to carry out a process of reflection. However, this process of reflection does not always take place. Some authors suggest that when children face a problem, instead of stopping to understand the situation, they limit themselves to applying algorithms and operating with all available quantities, without stopping to think whether they are all necessary or not (Verschaffel, <http://proyectomatematicasyarte.blogspot.com/2017/05/problemas-de-matematicas-y-la.html>)

## CONCLUSIONS:

The hypothesis has been verified, there is a positive correlation between the Language and communication variable and Mathematics, this correlation is 0.426, which places it as a medium positive correlation. We can conclude that this phenomenon persists to date, that is, those students who better understand what they read, this will imply that they obtain better grades in mathematics.

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