

## CONCEPT MAP AS A LEARNING STRATEGY OF HISTORY IN SECONDARY SCHOOL IN MEXICO

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**Abstract:** Teenagers from 12 to 14 years old attend secondary school in Mexico, whereby they are taught history during the three years of secondary school's duration. At this stage, history is normally taught in a mechanical manner and kids make use of procedures that are useful to memorize specific facts but not to learn meaningfully. As a result, the outcome of this process does not match the optimal expectation. In order to improve the outcome, the necessity to assess and compare different teaching techniques arises. The scope of this analysis is to compare the use of concept maps in opposition to the current procedures used in history teaching process. The results obtained from the comparison demonstrate that concept maps are better tools than the current ones used to teach history in secondary school. Therefore, the spread usage of concept maps should be increased.

### 1 Introduction

Secondary school in Mexico is attended by kids from twelve to fourteen years old, whereby history is taught throughout the three years of its duration. The first year course goes from prehistory to the 16<sup>th</sup> century, the second year course goes from the 16<sup>th</sup> century until the 20<sup>th</sup> century, and the third year course deals with Mexican History. Supposedly, the use of timelines, chronological schemes, oral or written references, historical maps, museum guided tours, information or communication technology, among other resources, could aid the learning process. However, nor the use of the previously mentioned resources, nor the use of concept maps are used.

Although history has vital importance throughout teenagers education, the outcome obtained from the learning process is not desirable. Therefore, in order to improve teaching methods, the analysis of alternative techniques becomes a necessity.

### 2 History learning throughout secondary school

History studies and explains, in a rational and clear manner, past facts and changes in society that have contributed to a progress of humanity throughout time. It is not a plain description of the past, nor a relation of relevant dates, nor an explanation of what well known individuals did at their time, nor a narration of tales or anecdotes (Gallo, 1999). Essentially, history studies human kind, societies and their changes (Florescano, 2000).

In order to be taught, several methods have been proponed; such as simulation, cause and effect analysis (Boleo, 1998); critical oriented research, interpretation, explanation, and reconstruction (De la Torre, 1996); deciphering, reproduction, and interpretation of books' images (Deceano, 1997); evaluating problems focusing on subjects, facts, present and past relations, and social phenomena (Gallo, 1999); provocation of constant cognoscitive disequilibrium (Garduño, 2001); usage of timelines, narrative texts, biographies, novels, popular songs, newspapers, and museums guided tours (Lerner, 1998 and Sánchez, 2000). Although some of these are considered within history courses, teachers normally base their lessons on the textbook and their own explanations (Mora, 2001).

On the other hand, students normally make use of the following studying techniques: textbooks reading and underlining, summaries elaboration, specific facts questionnaires answering, facts memorization, and chronologies elaboration (Suaste, 2000). Such strategies are used from a sole source: the textbook (López, 1996); which besides having a traditional focus (Mayorga, 1998), includes encyclopedically oriented themes (Lerner, 1997).

Although the utility, in natural and social sciences, of concept maps has been proved during teaching, learning, and evaluation has been proved; they are not used within our country's secondary school history courses. Due to its inexistence, there is not available data referring to its viability either. Therefore, the purpose of the following investigation is to provide information regarding the utility of concept maps as a teaching and learning strategy compared to other current commonly used techniques.

### 3 Subject definition

Two intact third grade groups from a secondary school of Mexico City were included. Each group was conformed of twenty students which were randomly divided in halves to take conform four groups of ten students. The motivational and grade averages were analogue (Figure 1). All of the four group students were taught the same history subject by the same teacher.

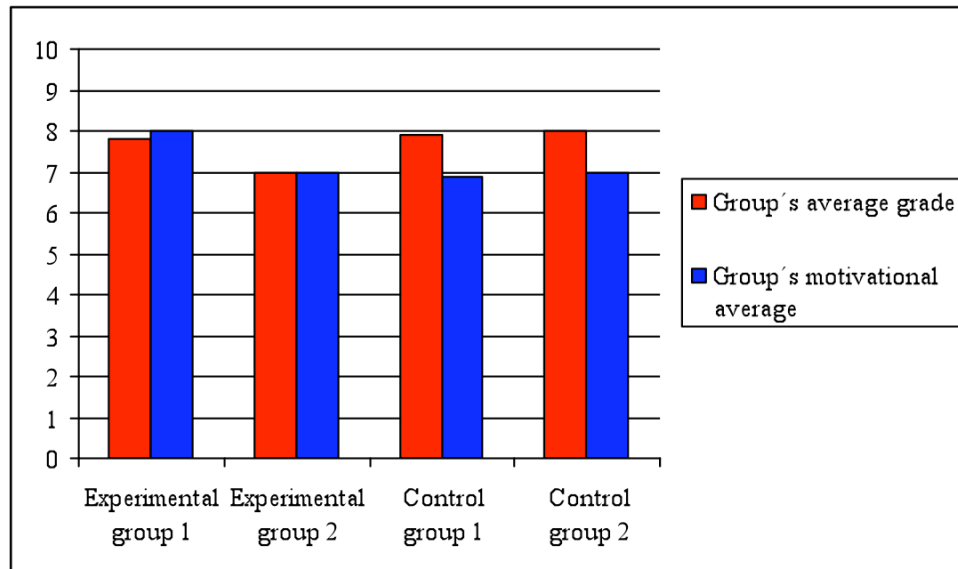


Figure 1. Motivational and grade average.

### 4 Procedure

Two of the four groups were randomly labeled as experimental, and two of them as control groups. Students from an experimental group, as well as from a control group, were applied a pre- test. Both of them consisted in the same eight, long answer questions. The assessment is similar to the one used to evaluate students' performance in class. Although for this analysis four groups were formed, the class is normally taught in two groups by the same professor and strategy, whereby this strategy is usually different from the one that professors are supposed to follow. According to a questionnaire outcome, the studying strategies used by students were underlining, summaries elaboration, and specific facts questionnaires response.

Prior to the post-test, the experimental groups took part of an intensive concept map elaboration course. Each student belonging to this group had the assignment of making a concept map at home about the class. The rest of the groups were only asked to perform traditional assignments, not related to concept mapping. In that sense, the only difference between control and experimental groups was the studying and assignment completion procedures.

### 5 Results

The mean resulting from the pre-tests were equal. This affirmed the existence of equivalence among history knowledge, as well as the motivational and grade average did (Figure 1). This situation was not the same at the pos-test results, where experimental groups obtained higher grades than those of the control groups. Table 1 displays this situation.

Table 1:  
Mean and standard deviation of each groups' pre and post test

Group		Pre-test		Pos-test	
Experimental	with pretest	Mean	4.9	Mean	7.1
		Std. dev.	1.74	Std. dev.	1.69
Control	with pretest	Mean	4.9	Mean	5.9
		Std dev.	1.31	Std. Dev.	1.78
Experimental	without pretest			Mean	6.4
				Std Dev.	1.64
Control	without pretest			Mean	5.2
				Std Dev.	.96

To determine whether group differences were significant or not, a one-way ANOVA was applied. The following results were obtained:

Table 2:  
Results from ANOVA within and between groups.

	Sum of Squares	df	Mean Square	F
Between Groups	20.833	3	6.944	2.890*
Within Groups	88.507	36	2.403	
Total	107.340	39		

\* $p < .05$

The t-test, of mean differences, between experimental groups, with or without pre-test; control groups, with or without pre-test; and between control and experimental groups, showed relevant differences only in the latter ones with a probability of  $p < .0$ .

The result synthesis graph clearly demonstrates that the usage of concept maps as a learning tool improve history learning and teaching processes compared to the ones used in secondary school.

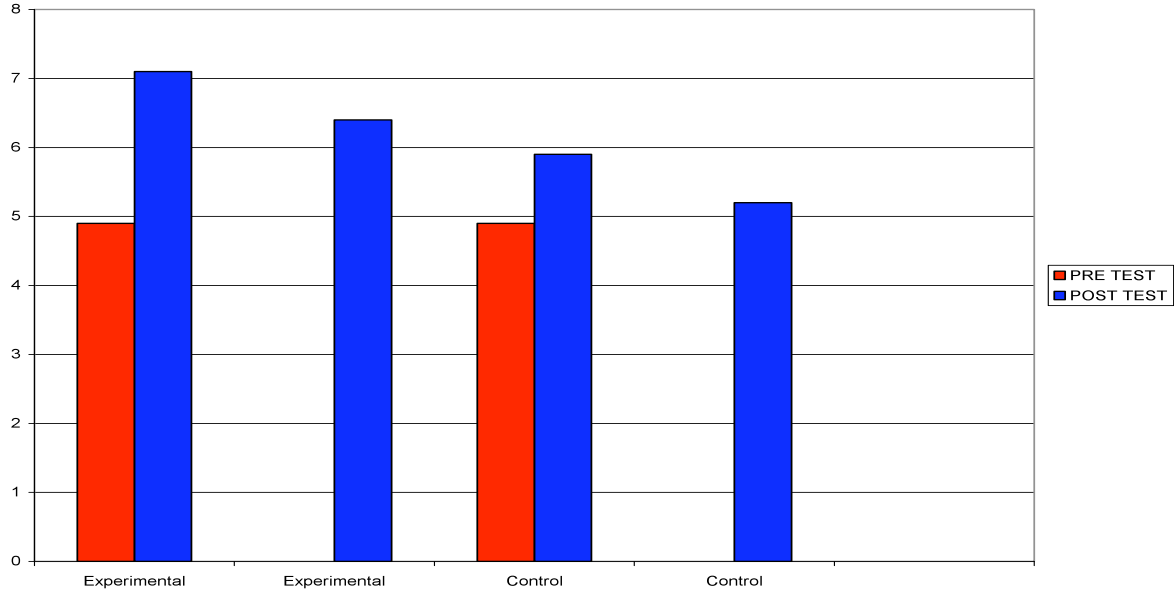


Figure 2. Groups' mean in pre-test and pos-test

## 6 Conclusions

Concept map is a useful technique to learn history for students in secondary school. With its usage, students obtain performances than with the practice of procedures teachers normally promote. In that sense, memorization will be diminished until the extent that students use learning strategies that allow them to understand the significance of knowledge in history and other related subjects (Florescano, 2000).

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