

Effectiveness of Cognitive Mapping as a Learning Strategy in Teaching Economics

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Abstract: *Cognitive Mapping as teaching strategy expects to develop students with high critical thinking skills with results for acquisition of skills necessary for work. Nowadays, the current educational system in the Philippine is considered as a failure because most of our teaching and learning interaction happens only on the four walls of the classroom. The teaching focuses on lecture type, more facts rather than skills are thought. This study is an experimental type, which aims to assess the effectiveness of Cognitive Mapping as teaching strategy at second year BSIP students of College of Arts and Sciences (CAS) during 2nd Semester of the school year 2020-2021. Findings revealed that the Economics learning of students exposed to the Cognitive mapping and to the traditional strategy did not differ significantly, thus both groups were still comparable after the treatment. However, the Cognitive Mapping seemed to have an impact on the students' performance in analytical thinking. Towards the end of the study, the conclusion were drawn and recommendations were offered.*

Keywords—Cognitive Mapping, Learning Strategy, Teaching Economics

1. INTRODUCTION

Filipinos are highly competitive individual; we belong now in a society where everybody is hungry with opportunities. Nowadays, Philippines decided to meet challenges of globalization. In line with this, the teachers may adopt a teaching strategy to address the needs in the classroom.

2. RELATED WORKS

Cognitive Mapping as teaching strategy expects to develop students with high critical thinking skills with results for acquisition of skills necessary for work. Nowadays, the current educational system in the Philippine is considered as a failure because most of our teaching and learning interaction happens only on the four walls of the classroom. The teaching focuses on lecture type, more facts rather than skills are thought.

A way of investigating the world, organizing an experience and make a question about the physical world. A strong recommendation comes from educator who advocates that Economics educators should teach the subject for the development of concept learning, critical thinking, and skills process [1].

As educators it is of the utmost importance that we recognize and nurture all the varied human intelligences and all the combinations of intelligences in our students. Through this recognition, we can increase our students' learning and problem-solving abilities if we increase their repertoires of problem-solving tools by actively encouraging them to use all facets of intelligence.

Current research on intelligence and the brain suggests that we learn best when we are engaged in meaningful classroom learning experiences that help us discover and develop our strengths and talents. It is through these learning experiences that teachers not only motivate our quest to learn, but also foster the development of persistence and effort that is necessary for acquiring skills, knowledge, and attitudes in sufficient depth for us to be able to apply them in other settings.

The prior knowledge that we bring with us to a new learning situation exerts a tremendous influence on how we interpret this new experience [2].

To successfully learn new information, we must be able to construct meaning actively and relate it to our own lives in a meaningful way. Using instructional strategies based on current brain research, the teacher focuses on the learner's understanding of content and the ability to use the information rather than on the memorization of isolated bits of information. The new information that the student is engaged in learning focuses on "real life" or "authentic" tasks that require problem solving, creative thinking, and critical thinking. This approach requires teachers to structure what is addressed instructionally and in the curriculum around key ideas rather than try to "cover content" [3].

Cognitive mapping is a "framework for designing curriculum units, performance assessments, and instruction that lead your students to deep understanding of the content you teach "Cognitive mapping expands on" six facets of understanding", which include students being able to explain, interpret, apply, have perspective, empathize, and have self-knowledge about a given topic [4].

"Teaching for understanding" is another central premise of Understanding by Design. It should be evident in course design, teacher and student attitudes, and the classroom learning environment. There should be coherent curriculum design and clear distinctions between big ideas and essential questions. Teachers should tell students about big ideas and essential questions, performance requirements, and evaluative criteria at the beginning of the unit or course. Students should be able to describe the goals (big ideas and essential questions) and performance requirements of the unit or course. The learning environment should have high expectations and incentives for all students to come to understand the big ideas and answer the essential questions [5].

3. STATEMENT OF THE PROBLEM

The main problem of this study is to assess the effectiveness of Cognitive Mapping as learning strategy on Economic concept learning and achievement of second year BSIP Students College of Arts and Sciences (CAS) during 2nd Semester of the school year 2020-2021.

Specifically, it sought answers to the following sub-problems.

1. What is the effect of the cognitive mapping on students' learning Economics concepts in terms of:

- 1.1 knowledge and comprehension;
- 1.2 application;
- 1.3 analysis; and,
- 1.4 synthesis and evaluation?

2. What is the attitude towards learning Economic concepts of the students exposed to Cognitive Mapping as compared with the students exposed to the traditional strategy?

3. Is there a significant difference in the performance of boys and girls after the treatment?

4. METHODOLOGY

This study used an experimental type of research which aims to assess the effectiveness of Cognitive Mapping as teaching strategy at second year BSIP students of College of Arts and Sciences (CAS) during 2nd Semester of the school year 2020-2021.

5. RESULTS

Effect of the cognitive mapping on students' learning Economics concepts

Knowledge and Comprehension

The data showed that the item "Define the basic concepts of demand" got highest weighted means of 3.28 and 3.06 which are both accepted by the student-respondents in both groups of cognitive mapping and traditional strategies groups with a composite of 3.17 with the same verbal interpretation.

Application Level

It reveals that the highest weighted mean in cognitive mapping group was the item "Construct the demand curve of egg" with a weighted mean of 3.25, while in traditional strategies was "Solve the income elasticity" with a weighted mean of 3.28 with the same verbal interpretation of "accepted" by the student-respondents.

Analysis Level

It gives that the highest weighted mean in both cognitive mapping and traditional strategies groups was the item "Select the appropriate degree of elasticity" got a weighted mean of

3.45 and 3.61 respectively each has a verbal interpretation of "accepted" by the student-respondents.

Synthesis and Evaluation Level

It concludes that the highest weighted mean in cognitive mapping group was the item "Formulate the formula to computing elasticity" with a weighted mean of 3.42, while in traditional strategies was "Organize the determinant of demand" with the same weighted mean of 3.42, each has a verbal interpretation of "accepted" by the student-respondents.

Significant Difference on the Attitude Towards Learning Economics Concept Between Two Groups

To determine if there was a significant difference in the attitude towards learning Economics concept of students in both groups before and after the treatment, the t-test value of 2.414 is higher than the critical value of 2.093 at .05 level of significance because the computed t-value of .85 is less than the critical value.

This finding show that the gain mean scores of the experimental group is significantly different in favor of the post-test scores, while the control group's gain mean scores did not differ significantly. The results show that the Cognitive Mapping improved the attitude towards learning Economics of the BSIP students in the experimental group.

Likewise, the Cognitive Mapping appears to have an influence on the variation in performance of the BSIP students in the experimental group, thus the Cognitive mapping strategy made the group more heterogeneous in nature as indicated by the standard deviation for the post-test scores which is 8.55 as compared to the pre-test standard deviation of 6.38. The performance of students in the control group did not vary much as indicated by the pre and post-test scores' standard deviation of 7.40 and 7.49, respectively.

As observed during middle through the latter part of the experiment, the experimental group was already familiar with three of the four steps of cognitive mapping. Moreover, during class discussion, almost all the students in the experimental group were more active and interested in learning interaction.

Significant Difference in the Performance of Boys and Girls After the Treatment

The variable gender obtained the F-ratio of .577 for boys which is less than the required value of 4.11 at .05 level of significance. This finding shows that there is no significant difference in the performance of boys in both groups. Moreover, the weighted mean of 4.53 and 4.18 for boys and girls, respectively, in the experimental group suggest that the Cognitive Mapping did not affect the heterogeneous grouping of these groups. This implies that the performance of boys in the traditional group and control does not significantly change their learning.

6. DISCUSSION

The results show that the Cognitive Mapping seemed to significantly affect the analytical skills of the students. This

can be attributed to the learning activities which gave the students a chance to be conscious of the different steps they take whenever they perform a certain thinking skill, thus helping them to analyze the problems using these steps. This finding claim that whenever a student performs reflective thinking, that is when they successfully practice self-awareness of their thinking processes, this may lead to improvement in thinking skills of the student. However, the control group, which gave emphasis on the concept understanding during the reflection part of the lesson, obtained a mean score higher than the experimental group but it was not significantly different. This implies that though student are allowed to reflect on the cognitive mapping used to formulate meaning on the concept, still, their performance on the application level items, did not improve.

7. CONCLUSIONS

In the light of the findings of the study, the following conclusions were drawn:

1. The students' performance in situations and problems that needed analysis was better improved by the Cognitive Mapping than the use of the traditional strategy.
2. Gender was not a factor in the learning of Economics concepts of BSIP students from both groups.
3. There was no interaction between teaching strategies and gender.

8. RECOMMENDATIONS

Based on the findings, the following recommendations are hereby given:

1. That longer exposure to the Cognitive Mapping may be done in order to give the students the chance to master the steps in using different thinking skills;
2. That the longer term effect of the exposure to Cognitive Mapping be tested and investigated in the other subjects of Social Sciences;
3. That future studies consider three groups of students.

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