Situational Map: A Strategy to develop critical thinking in the teaching of scientific research

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University students have weaknesses in the execution of information processing, their deficit to perform abstractions in the reading of theoretical documents and the creation of constructs is very high, therefore, the work to explain the scientific findings is precarious in the process of the written transfer.
The action of the brain in learning.

The processing of information, our own brain action, develops higher order thinking skills, if properly stimulated (Schmeck, 1996)

Source: https://askabiologist.asu.edu/brain-regions
Theoretical references

• "Critical thinking is characterized by being a higher order thought, in which knowledge, experiences, dispositions and intellectual abilities are involved" (Carbogim, Oliveira and Püschel, 2016, p.5).

• The mapping activity is not limited to visual patterns, but applies to any sensory pattern in which the brain intervenes by building it. "(Damasio, 2010, p116)

• "Learning means establishing meaningful relationships between what is already known and what should be known, this through deepening dynamics and extension of knowledge." (Marambio, 2017, p.5).
Situational map

An elaborate strategy to organize ideas from abstract thinking and develop critical thinking in students to introduce them to research processes.
objective

- Support students in the development of rational, logical and analytical process that must be performed when facing a research problem at the beginning of an investigation.
Methodology

- Exploratory research design.
- Qualitative
- Online opinion poll
- The situational map was applied to 50 graduates of the Early Childhood Education program, but 27 responded to the survey.
- From the years of graduation 2017 to 2020
Construction of the Situational map

1. This is a mental pattern that helps the student to think scientifically about how to define the problem under study by critically analyzing the context to be investigated.

2. They must think and reflect on the beliefs of the environment in relation to the problem they are going to study.

3. They then identify the real problems; usually the problems arise from false beliefs that are embedded in the community under study.

4. The criteria for improvement are the philosophical ideas or theoretical constructs, which will support the search for the solution to the problem.

5. To consider all the possible ways to solve the problem under study.

6. The researchers reflect and analyze critically on the context projecting the solution of the problems, exposing; how it would be? Prospective vision of the research result.
Instrument validation by expert judges
92.6% of the graduates totally agree that the situational map organized their ideas when starting the investigation.

81.5% of the graduates totally agree that in the process of preparing the situational map, they made a logical and critical analysis of the reality to be investigated.
Opinion survey results

- 74.1% of the graduates strongly agree that the theoretical framework, the situational map made it possible to focus the search for information on the specific problem.
On a scale from 1 to 10 (1 being very deficient and 10 excellent), how do you assess the situational map on the support given for your thesis construction?

- 81.5% of the graduates evaluated with a maximum score of 10 the use of the situational map in the research process of their thesis.
- 11.1% evaluated with a score of 9 being also an optimal grade.
- Another 7.4% of students evaluated with a score of 8 the use of the situational map.
Explain why you assign that score to the Diagram called Situational Map, provide reasons.

- Because it was a tool that facilitated the organization of the research from the first moment, it allowed us to show the path we had to follow in order not to lose the investigative focus. (Student 1).
- Because it gave us an order, allowed us to organize ideas and guide our research, from where to investigate and the limits to stay within the research topic. (Student 4)
- The situational map, which I have used for the third time, allows me to observe the reality and context of study from an external and objective viewpoint. In this way, the problematization is generated in an easy way, through a logical order, eliminating distracting concepts from the object of study.
Grades obtained by the students in their Thesis where the Situational Map was applied
Conclusion

• The Situational Map is a mental pattern that provides a structured and systemic vision that allows identifying the problem to be investigated, using critical thinking to provide a prospective vision of the investigation, determine objectives and organizing the investigative process.

• The trend registers that 92.6% of the respondents have managed to organize the ideas of the investigative process in the construction of the situational map.

• 81.5% of the sample population developed critical thinking, putting into practice the capacities of logical reasoning, critical reflection of reality and problem solving.

• The 81.5% of the respondents who evaluated the application of the situational map as excellent in the development of their theses obtained scores between 6.0 and 6.5. (From a scale of grades from 1 to 7, grades 6 to 7 qualify as very good)

• Pedagogues raise the relevance of developing critical thinking with skills of perspective analysis, comparison and abstraction in order to generate scientists who contribute new knowledge in all areas of life and sustainability.