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Explanation women's Artistic Sketches based on Scientific Epistemological Beliefs with the role of Cognitive Load mediator in Architectural Design Education

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Abstract

Introduction

The main focus of educational planners in the field of architecture is to pay attention to the design process in education. Many studies and researches have been done on the influential factors related to design with the aim of strengthening the quality of education in terms of teaching method, content and method. Various theories have addressed this issue. One of these theories is the theory of cognitivism. Cognitive theory is one of the important theories in learning and examines cognitive concepts and components to grow and strengthen systematic learning processes. One of the main assumptions of this theory is how to acquire information and process it. Epistemological beliefs are personal beliefs about knowledge and how to acquire knowledge and play an important role in information processing, learning methods, thinking and problem solving skills. The design process in architecture is one of the curricula of the field of architecture that is taught at different educational levels. For optimal educational planning, it is necessary to identify the variables related to it. Among the variables related to the design process and method are the epistemological beliefs and cognitive load of the learners. The purpose of the current research was to investigate the relationship between scientific epistemological and cognitive load with ideation in the design process of architecture students. Therefore, this article tries to answer the following questions:1- How can the idea of manuscripts be explained based on the belief of scientific epistemology? 2- How can the idea of sketches be explained based on cognitive load? 3- How can scientific epistemological belief explain cognitive load? 4- How does the belief of scientific epistemology explain the idea of sketches through cognitive mediation? (main question).

Methodology

This research was conducted with a quantitative (descriptive-correlation method) and qualitative (sample analysis of students' manuscripts) approach. The statistical population of this research includes all female students of Hamedan universities in the academic year of 2021-2022. Considering that the number of students with design courses was limited, therefore, 120 people were selected as a sample. It should be noted that due to the conditions of the corona disease and the lack of proper access to some students, questionnaires and design samples were sent and received through the Internet and the relevant link. Scientific epistemology, cognitive load and idea evaluation scale questionnaires were used in the design. The research data were analyzed by descriptive statistics (mean, standard deviation, skewness and skewness statistics) and inferential statistics (Pearson's correlation and path analysis with the calculation of its defaults).

Results

This research was conducted with the aim of investigating and identifying the components related to design and sketches. In this research, SPSS version 22 and Smart PLS, version 3.2 software were used to process data and raw findings. In order to analyze the information in the two sections of descriptive statistics, frequency of data and description of data, and in the section of proving hypotheses and analyzing data, regression test and structural equations were used. The sample of the present study includes 120 female architecture students with an average and standard deviation of age of 21.87 ± 2.96. The results of the research showed that there is a relationship between the beliefs of scientific epistemology and cognitive load with ideation in the design

process of architecture students and it has provided a framework for recognizing and explaining the theoretical relationships between the components of scientific epistemological beliefs, cognitive load and the idea of Sketches. The learning process in architectural design and cartography courses includes the stages of analytical comprehension, critical thinking, and creative processing, so scientific epistemological belief and cognitive balance or cognitive load are good explanations and predictors for ideas in students. Based on the results of the research, it is suggested to pay attention to the reduction of Intrinsic and Extraneous cognitive load in planning the education of architecture students, as well as Germane cognitive processing so that they can make better progress in the field of design. The development of scientific epistemological beliefs is also recommended for generating and analyzing ideas.

Conclusion

The main assumption in the curricula of the architecture field is to pay attention to the design process. To achieve this purpose, it is necessary to identify the influencing factors related to the design. In the field of sketches in the architectural design process, great architects addressed the topic and the place of the idea as the beginning of the design process, the process of ideation in design education, as well as its mental stages, i.e. idea generation and idea processing. Epistemological beliefs are related to the designer's beliefs about the nature of knowledge and the process of knowing, so these beliefs both indicate the designer's understanding of design knowledge and the nature of knowing and are also a good predictor for finding ideas. Epistemological belief is a cognitive process that helps the designer understand how to solve scientific problems, evaluate and apply new information. Since the learning process in architectural design and cartography courses includes the stages of analytical comprehension, critical thinking and creative processing, it is necessary to have scientific belief and cognitive balance related to it. In other words, the learning process in architectural design and cartography courses includes the stages of analytical understanding and comprehension, critical thinking and creative processing, so scientific epistemological belief and cognitive balance or cognitive load are desirable explanations and predictors. It is good to measure the idea in the student's sketches. According to the results of the research, the following suggestions are presented: Those involved in architectural education should apply the basic principles of cognitive load theory so that they can make better progress in the field of design and blueprint education. Reducing the complexity of the educational content and the difficulty level of the content for the learner in order to reduce the internal cognitive load. Presenting the elements and how to design educational content and present it to the learner to reduce external cognitive load. Encouraging the learner to make mental efforts to acquire new mental schemas, learn educational content and automate their learning for optimal cognitive processing. Facilitating the development of scientific epistemological beliefs through the discussion and analysis of ideas in the sketches and engaging and participating students in scientific discussions. Conducting research in a wider statistical community, taking into account demographic and gender variables.

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