

Attitude of university faculty members to the problem- oriented virtual education

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ABSTRACT

Nowadays, in order to enter the age of knowledge and face the amazing developments of the 21st century, learners must increasingly learn critical and creative thinking skills to make decisions and solve complex challenges and issues of society. The purpose of the research was to determine the attitude and validation of problem-oriented virtual education in university. The research was done in two stages and using the survey method. In the first survey part, the identification of lecturer' attitudes in the virtual environment towards problem-oriented components was identified. For this purpose, by using a researcher-made questionnaire and considering 53 indicators that were extracted from theoretical literature, the desired components were extracted and introduced by taking into account the highest and lowest averages. The statistical population in this section was 423 lecturers and faculty members of Mazandaran University, and a sample of 147 people was selected by simple random sampling. The second part of the research sought to confirm or validate the obtained components. For this purpose, a sample of 15 people including curriculum experts and faculty members were selected based on their experience of using problem-centered teaching. By describing the data, the components of the curriculum were determined in terms of goals, content, teaching and learning strategies, and evaluation. In the validation section, using a two-stage confirmatory factor analysis, five components in the field of goals, two components in the field of content, three components in the field of teaching-learning strategies and two components in the field of evaluation strategies as factors and final components of the curriculum model were introduced. According to the obtained components, higher education courses in the field of goals, content, teaching and learning methods and evaluation can use this model.

Keywords: Educational Design, problem-oriented, virtual education, Higher Education



Introduction

An examination of the history of higher education reveals that curricula have been a key element shaping the quality of academic outcomes. Problem-based curricula, emphasizing active and constructivist approaches, are recognized as a dynamic method to enhance the efficiency of higher education. This approach fosters intrinsic motivation, meaningful learning, and the development of critical and creative thinking skills, enabling students to tackle complex societal challenges. The roots of this approach trace back to Dewey's ideas and the philosophy of progressivism. Today, with the advent of digital technologies, problem-based virtual education has emerged as an effective strategy to increase active student participation and improve sustainable learning. The closure of universities during the COVID-19 pandemic further highlighted the importance of active and problem-based learning in virtual environments. Research indicates that problem-based curricula in virtual settings, incorporating components such as enhancing social skills, deepening critical thinking, and utilizing technology, can contribute to improving the quality of higher education. However, the success of this approach requires careful design of content, teaching-learning methods, and assessments tailored to learners' needs. Studying faculty attitudes and examining the components of problem-based curricula in the areas of objectives, content, methods, and evaluation is a crucial step for the development and validation of this model in virtual education.

Methodology

The research was conducted in two phases using a survey method. In the first phase, 53 initial indicators were identified through synthesis research across four domains: objectives (18 indicators), content (10 indicators), teaching-learning strategies (12 indicators), and evaluation strategies (13 indicators) of problem-based curricula. A researcher-made questionnaire was developed and distributed among 147 faculty members at the University of Mazandaran. Data were analyzed using exploratory factor analysis. In the second phase, to validate the results, the opinions of 15 experts in problem-based education were purposively collected and analyzed. The questionnaire demonstrated a validity of 0.79 (CVI) and a reliability of 0.90 (Cronbach's alpha), indicating that the proposed model is reliable and valid. This research identified and validated the key components of problem-based curricula in virtual education.

Findings

After exploratory factor analysis, the model was designed with five components in the objectives element: fostering scientific inquiry, enhancing social skills, promoting deep thinking, future-oriented thinking, and emphasizing meaningful learning. The content element included two components: technological skills and civic rights and responsibilities. The teaching-learning strategies element comprised three components: problem-solving, brainstorming, and project-based learning. The evaluation strategies element included two components: practical-skill assessment and assessment based on individual capabilities. The model was validated using structural equation modeling.

Conclusion

In the objectives element, the five components—fostering scientific inquiry, enhancing social skills, promoting deep thinking, future-oriented thinking, and emphasizing meaningful learning—all emphasize the development of cognitive, affective, and social skills in virtual education. Online environments can enhance curiosity and self-direction through structured discussions. Additionally, social skills and deep thinking are emphasized in modern virtual education models like "communities of inquiry," which facilitate group interactions and critical thinking through collaborative projects. Future-oriented thinking and meaningful learning align with the needs of the 21st century, preparing students to face future challenges.

In the content element, the two components—technological skills and civic rights and responsibilities—reflect a focus on practical skills and social awareness in virtual education. Technological skills, as a necessity in the digital age, are vital for success in online learning. Civic rights and responsibilities align with sustainable development goals, promoting social responsibility through the study of contemporary issues such as climate change and social justice.

In the teaching-learning strategies element, the components—problem-solving, brainstorming, and project-based learning—all involve active and participatory methods. Problem-solving, as the core of problem-based learning, is a key strategy for developing critical thinking in virtual environments. Brainstorming is a method for enhancing creativity in online groups using tools like digital whiteboards. Project-based learning, focusing on practical projects, is emphasized in experiential learning frameworks, where team activities in virtual education can deepen learning through hands-on experience. Finally, the evaluation strategies element includes two components: practical-skill assessment and assessment based on individual capabilities. Practical-skill assessment, focusing on applied abilities, is an effective method for aligning curriculum objectives with real learning outcomes in online environments. Assessment based on individual capabilities aligns with modern formative assessment approaches, where continuous feedback on virtual platforms can increase students' self-awareness and help identify their strengths and weaknesses.

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