The Interactive Electronic Simulation Pattern (Guided – Free) Using a 3D Design Program and Its Impact on Developing Mindfulness, 3D Learning Object Design Skills, and Learning Enjoyment Among Home Economics Students

This study aims to develop an e-learning environment based on the use of the interactive electronic simulation pattern (guided – free) through the CLO 3D program, and to investigate its effects on enhancing mindfulness, 3D learning object design skills, and learning enjoyment among students of Home Economics. To achieve this objective, the educational tasks were identified in alignment with the instructional needs of students enrolled in the Home Economics Teacher Preparation Program, specifically within the "Software in Home Economics" course.

Instructional tasks were produced in the form of educational video clips, and two simulation models were designed: the first employing guided interactive simulation, and the second employing free interactive simulation. A list of design standards for the e-learning environment incorporating both simulation patterns was established, along with a set of target skills for students. Additionally, the following research tools were applied: a mindfulness scale, a product evaluation rubric to assess 3D learning object design skills, and a learning enjoyment scale. The experimental content was designed and developed based on Mohamed Attia Khamis's (2015) instructional design model.

The study employed a quasi-experimental design involving two experimental groups under a single independent variable presented in two different formats. The research sample consisted of 50 third-year students from the Home Economics Teacher Preparation Program, randomly assigned into two groups: 25 students experienced the guided simulation, and 25 experienced the free simulation. The researchers developed the following instruments: a pre/post achievement test to measure knowledge related to educational software, a pre/post mindfulness scale, a pre/post

product evaluation card for 3D object design skills, and a pre/post learning enjoyment scale. All tools were validated for reliability and effectiveness. A total of 22 hypotheses were formulated to address the study's research questions.